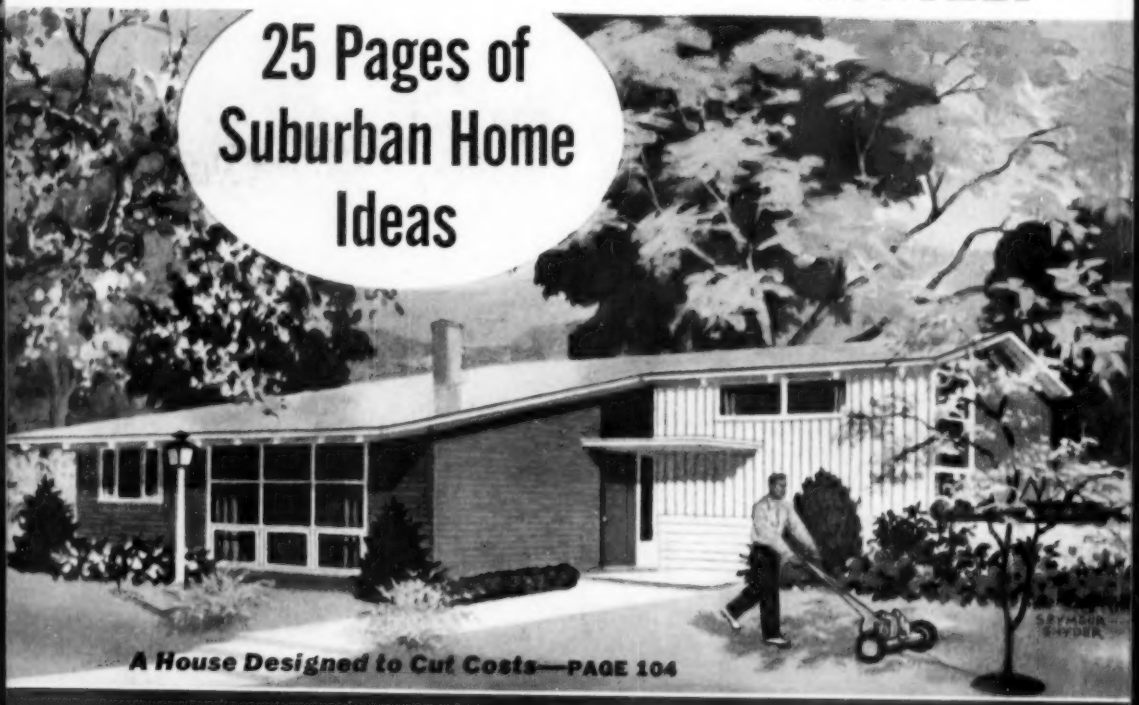
MECHANICS · AUTOS · HOMEBUILDING

POPULAR SCIENCE

April 35¢

MONTHLY



25 Pages of Suburban Home Ideas

A House Designed to Cut Costs—PAGE 104

HORSEPOWER-RACE NEWS

PAGES 122 to 132

How Do-It-Yourself Dads Are Building and Racing

Midget Midgets

PAGE 166

With an outfit like this you've got *new* cruising range. Plenty of power—and plenty of room—for plenty of fun! Here is fishin' deluxe at *little* cost, thanks to Johnson's development of a DEPENDable high-power outboard—with gear shift, separate plug-in fuel system, remote control. And with it all you now get a ride that's unbelievably smooth, easy, QUIET—the result of Johnson's amazing Suspension Drive. Your Johnson Dealer will show you. Look for his name under "Outboard Motors" in your classified telephone directory.

FREE! New Sea-Horse Catalog gives complete details on the 5 great Sea-Horses for 1955. Write.

JOHNSON MOTORS, 500 Pershing Road, Waukegan, Ill.

In Canada: Manufactured by Johnson Motors, Peterborough

1955 SEA-HORSES

SEA-HORSE 25 Electric Starting	25 hp	$525.00*
SEA-HORSE 25	25 hp	430.00*
SEA-HORSE 10	10 hp	310.00*
SEA-HORSE 5½	5½ hp	210.00*
SEA-HORSE 3	3 hp	145.00

**Includes Mile-Master Fuel System*

Prices f.o.b. factory, subject to change. All ratings are OEC certified brake hp. at 4000 rpm.

Johnson SEA-HORSES FOR DEPENDABILITY

A DIVISION OF OUTBOARD, MARINE & MANUFACTURING COMPANY

No wonder it's called "Miracle Vinyl-Flooring"!

MATICO ARISTOFLEX

RESISTS GREASE, ACID, ALKALI AND GRIME!

You'll call it "miracle flooring," too, when you see for yourself how rugged, durable MATICO Aristoflex shrugs off household acid, alkali and grease . . . stays new and sparkling looking with easy damp moppings. Biggest miracle of all is the price! Produced especially to meet the needs of homeowners everywhere, MATICO Aristoflex is low in cost . . . gives you more for your money. And you can install economical Aristoflex in every room in your home . . . from basement to attic. See Aristoflex in 12 rich, clear colors at your MATICO dealer soon. You'll find him listed in your classified telephone directory.

QUALITY CONTROLLED MATICO PRODUCTS

Guaranteed by Good Housekeeping

MASTIC TILE CORPORATION OF AMERICA

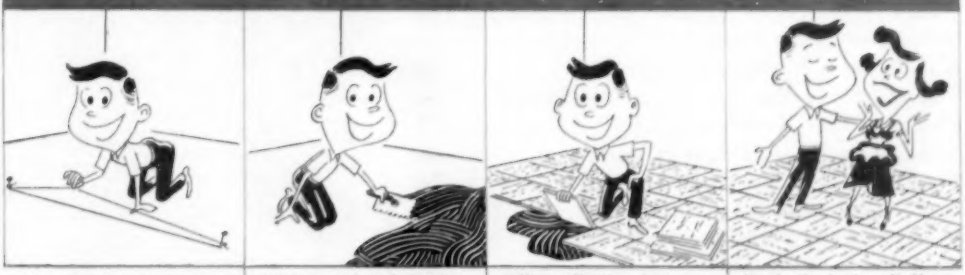
Joliet, Ill. • Long Beach, Calif. • Newburgh, N. Y.

Manufacturers of:

Aristoflex • Confetti • Parquetry • Asphalt Tile • Cork Tile • Plastic Wall Tile

4C138

INSTALL IT YOURSELF AND SAVE!



It's easy! Just mark a straight line through the center of your room in both directions, using a chalk and line. Be careful not to cover up your guide lines.

With a notched trowel, spread adhesive over one-half of your room at a time. leave only a thin coat of adhesive on the floor.

After adhesive becomes tacky, snap the tiles into place. Do not slide tiles or adhesive will push up between the tiles.

Here's the best part! Show your wife your handiwork. (Don't tell her what a cinch it is with MATICO's easy-to-follow instructions).

America's Leading New-Idea Magazine for 83 Years

Founded in 1872, Vol. 166: No. 4

POPULAR SCIENCE
REG. U. S. PAT. OFF. ***Monthly***

Mechanics and Handicraft
REG. U.S. PAT. OFF.

April, 1955

Page

SUBURBAN HOME IDEAS

Architects Salute 7 Fine Homes 98
Pros and Cons of Split-Level House 102
Uncle Sam Designs Low-Cost Home 104
It's Fun to Have a Garden Pool 199
A Storage Fence for Your Tools 205
Does Your Home Need a Raincoat? 206
The Easy Way to Pave a Terrace 209
How to Cure a Wet Basement 212

Indianapolis Racer Hits the Highway 107
This Summer You Can Stay Cool 112
How to Wear Artificial Clothes 113
Atomic Clocks Surpass Earth in Accuracy 120

HORSEPOWER-RACE NEWS

Mechanic Wins Horsepower Race 122
What Horsepower Really Means 126
Detroit's Most Powerful Car 128
Chrysler Sets Speed Mark 131

Tune Yourself In on the Rocketmen 138
How the H-Bombs Spread Radioactivity 144
Radio Hams Serve Nation Now 146
What Really Happened at Texas City 151
Gus Fixes a Reluctant Wagon 156
Science Arms You Against Snake Bites 160
Florida Plans New-World Fair 164
Youngsters Race Midget Midgets 166
Need an Extra Shower? Try a Prefab 176
A Mechanic Checks a Rattletrap 179
He Runs a Shipyard for Amateurs 185
How to Use TV Lighting for Home Photos 188
This Man Makes Dots 215
Prospecting with a Geiger Counter 231

(More features and departments are listed on page 4)

Editor
VOLTA TORREY

Managing Editor
HOWARD ALLAWAY

Art Editor
HOWARD C. JENSEN

Associate Editors
Alden P. Armagnac, Henry B. Comstock, Frank Dorr, Devon Francis, Sheldon M. Gallager, Wesley S. Griswold, Herbert O. Johansen, Martin Mann, Ruth Westphal.

Art
Harry Samuels (Director), Herbert Anthony, Gene Butera, Eric A. Karminski Jr., Henry W. Kazmirowski, Laylen H. Sweet.

Copy
Kendall W. Goodwyn (Director), Everett H. Ortner, Georgette Sparks, Harriet Trowbridge.

Photography
W. W. Morris (Director), Hubert Luckett, Orlando Guerra.

Assistant Managing Editors
Frank Rowsome Jr.
Robert P. Stevenson

Mechanics and Handicraft
Harry Walton

Midwestern Editor
Kenneth Wylie (Chicago)

Editorial Assistants
Stanley Beitler, Louise Levis, Teresa Robbins, Terry Simon, Joan Wolf.

Publisher
GODFREY HAMMOND

Advertising Director
STEPHEN P. GLENNON

Circulation Director
EUGENE WATSON

ADVERTISING OFFICES: NEW YORK—353 Fourth Ave.; CHICAGO—360 North Michigan Ave.; DETROIT—820 Book Bldg.; SAN FRANCISCO—114 Sansome St.; CLEVELAND—328 Citizens Bldg.; LOS ANGELES—1127 Wilshire Blvd.; PORTLAND, ORE.—520 S.W. Sixth Ave.

EDITORIAL OFFICES: 353 Fourth Avenue, New York 10, N. Y.

Published monthly at 353 Fourth Avenue, New York 10, N. Y., by Popular Science Publishing Co., Inc., Godfrey Hammond, President; Stephen P. Glennon, Vice-President and Secretary; Ralph H. Flynn, Vice-President and Treasurer; F. W. Briggs, Eugene Watson, Vice-Presidents. Entered as second-class matter Dec. 28, 1918, re-entered as second-class matter July 26, 1948, at the Post Office in New York, N. Y., under the act of March 3, 1879; additional entry as second-class matter at Dayton, Ohio. Entered as second-class matter at the Post Office Department, Canada. Printed in U.S.A. Copyright, 1955, by Popular Science Publishing Co., Inc. All rights reserved in the United States, Great Britain, and in all the countries participating in the International Copyright Convention and Pan-American Copyright Convention. Yearly subscriptions to United States, its possessions and Canada, $3.40 (2 years, $6.00; 3 years, $8.00); foreign countries $1 per year extra. Four weeks' notice is needed to change a subscriber's address. Please give both old and new addresses, including postal zone numbers.

I saw my job failure in my family's eyes

. . . but how they smiled when I. C. S. pulled me through

Take it from me. That's the hard way to discover a mistake.

I thought I was in solid down at the plant with my years of experience. They'd never lay *me* off.

But they did. And I *was* in solid—as long as business was good. But when things started getting tight . . .

"In times like these," the boss told me, "everybody has to pull his own weight and a little more. Experience is more than just adding up years. You have to learn something, too."

I was sore, sure. But when I calmed down I realized he was right. I decided then to start learning. I signed up for an I. C. S. Course, studied at home in my spare time.

Then I went back to the plant. The boss was so impressed with my I. C. S. diploma, he gave me another try . . . and soon after I even got a raise!

TRAINED men are in demand

It's a fact. *Right now* there are plenty of job opportunities for trained men. How do you get training and hold down a job at the same time? Simple. Study with I. C. S. at home, in your spare time, at a cost of only pennies a day.

I. C. S. is the oldest and largest correspondence school. 277 courses. Business, industrial, engineering, academic, high school. One for you. Direct, job-related. Bedrock facts and theory plus practical application. Complete lesson and answer service. Diploma to graduates.

3 FREE BOOKS

1. "How to Succeed," a gold mine of job tips that will open your eyes to your own mistakes. 2. An outline of job opportunities in the field of your choice. 3. A sample I.C.S. lesson text. Send for them today.

For Real Job Security—Get an I. C. S. Diploma! Easy-pay Plan I. C. S., Scranton 9, Penna.

INTERNATIONAL CORRESPONDENCE SCHOOLS ICS

BOX 22314S, SCRANTON 9, PENNA. (Partial list of 277 courses)

Without cost or obligation, send me "HOW to SUCCEED" and the opportunity booklet about the field BEFORE which I have marked X (plus sample lesson):

ACCOUNTING
- ☐ Accounting
- ☐ Accounting System Installation ☐ Auditing
- ☐ Cost Accounting
- ☐ Federal Tax
- ☐ Junior Accounting
- ☐ Partnership Accounting
- ☐ Practical Accounting
- ☐ Public Accounting

ADVERTISING
- ☐ Adv. Production
- ☐ Business Paper Adv.
- ☐ Department Store Adv.
- ☐ Direct Mail Adv.
- ☐ Magazine & Newspaper Adv.
- ☐ Mail Order Adv.
- ☐ Psychology of Adv.
- ☐ Public Relations
- ☐ Radio and Television
- ☐ Research and Testing
- ☐ Retail Adv.
- ☐ Visualizing the Layout
- ☐ Window, Interior Display

COMMERCIAL ART
- ☐ Adv. Layout, Illustration
- ☐ Commercial Cartooning
- ☐ Commercial Art
- ☐ Fashion Illustrating
- ☐ Show Card and Sign Lettering
- ☐ Sketching and Painting

ENGINEERING
- ☐ Aircraft ☐ Architecture
- ☐ Chemical ☐ Civil
- ☐ Electrical ☐ Industrial
- ☐ Mechanical ☐ Petroleum
- ☐ Stationary ☐ Radio TV
- ☐ Textile

EXECUTIVE MANAGEMENT
- ☐ Budgetary Accounting
- ☐ Business Administration
- ☐ Business Law
- ☐ Business Management
- ☐ Business Mathematics
- ☐ Condensed Business Practice
- ☐ Credits and Collections
- ☐ Financing ☐ Insurance
- ☐ Interpreting Financial Statements
- ☐ Letter Writing Improvement
- ☐ Marketing & Production
- ☐ Public Relations ☐ Purchasing
- ☐ Quality Control
- ☐ Report Writing
- ☐ Retail Business Management

INDUSTRIAL
- ☐ Drafting ☐ Electronics
- ☐ Industrial Instrumentation
- ☐ Quality Control
- ☐ Reading Blueprints
- ☐ Shop Practice ☐ Supervision

LEADERSHIP
- ☐ Foremanship
- ☐ Industrial Supervision
- ☐ Leadership
- ☐ Personnel Management

OFFICE MANAGEMENT
- ☐ Indexing and Filing
- ☐ Office Analysis
- ☐ Office Communications
- ☐ Office Forms
- ☐ Office Management
- ☐ Office Reproduction
- ☐ Personnel Management
- ☐ Supervision

PERSONNEL
- ☐ Collective Bargaining
- ☐ Employee Relations
- ☐ Employment Practices
- ☐ Incentive Wage Systems
- ☐ Job Analysis & Evaluation
- ☐ Labor Relations
- ☐ Organized Training

RETAIL
- ☐ Advertising
- ☐ Bookkeeping, Business Forms
- ☐ Buying, Pricing
- ☐ Department Store Operations
- ☐ Retail Merchandising
- ☐ Retail Salesmanship
- ☐ Window, Counter Display

SALESMANSHIP
- ☐ Creative Salesmanship
- ☐ Real Estate Salesmanship
- ☐ Sales Analysis
- ☐ Sales Letters
- ☐ Sales Management
- ☐ Selecting Salesmen
- ☐ Supervising Salesmen
- ☐ Training Salesmen

SECRETARIAL-STENOGRAPHIC
- ☐ Bookkeeping
- ☐ Business Correspondence
- ☐ Business English
- ☐ High School Subjects
- ☐ Professional Secretary
- ☐ Secretarial Accounting
- ☐ Stenography ☐ Typewriting

TRADES AND CRAFTS
- ☐ Air Conditioning
- ☐ Apprentice Training
- ☐ Automotive Repair
- ☐ Blue Print Reading
- ☐ Building Trades
- ☐ Diesel Engines
- ☐ Domestic Refrigeration
- ☐ Internal Combustion Engines
- ☐ Plumbing & Heating
- ☐ Radio and TV Servicing
- ☐ Railroading ☐ Sheet Metal
- ☐ Radio Operating ☐ Textiles

TRAFFIC MANAGEMENT
- ☐ Air Services
- ☐ Freight Class, Rates
- ☐ Freight Services, Facilities
- ☐ Motor Traffic Management
- ☐ Regulation of Carriers
- ☐ Shipping Documents
- ☐ Tracing, Expediting, Claims
- ☐ Traffic Control, Management

Name _____ Age _____ Home Address _____

City _____ Zone _____ State _____ Working Hours _____ A.M. to P.M. _____

Occupation _____

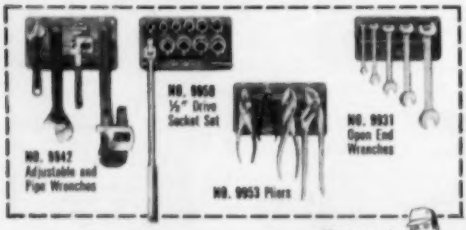
Canadian residents send coupon to International Correspondence Schools, Canadian, Ltd., Montreal, Canada. . . . Special tuition rates to members of the U. S. Armed Forces.

Build A Master Tool Set with Low-Cost PROTO-ADDA-UNITS

No. 9937 Combination Box and Open End Wrenches

Now, you can buy the PROTO Professional-Quality Tools you always wanted, the economical ADDA-UNIT way – as your budget permits. Each unit is a set of highly useful tools in the handiest tool holder ever designed for a workshop. The holders are made of a bright red plastic and are custom molded to hold each tool snugly. They keep your tools where you want them—when you want them—and they add a sparkle of color that makes any workshop a showplace. Start your master PROTO tool set today by getting one or more ADDA-UNITS from your PROTO dealer. Send 10¢ for 68-page catalog of entire line to

PLOMB TOOL COMPANY
2257E Santa Fe Ave., Los Angeles 54, Calif.



"Give your work the PROfessional TOuch"

9941

Eastern Factory, Jamestown, N.Y.
Canadian Factory, London, Ont.

PROTO TOOLS
PROTO PROfessional TOols

News and Pictures

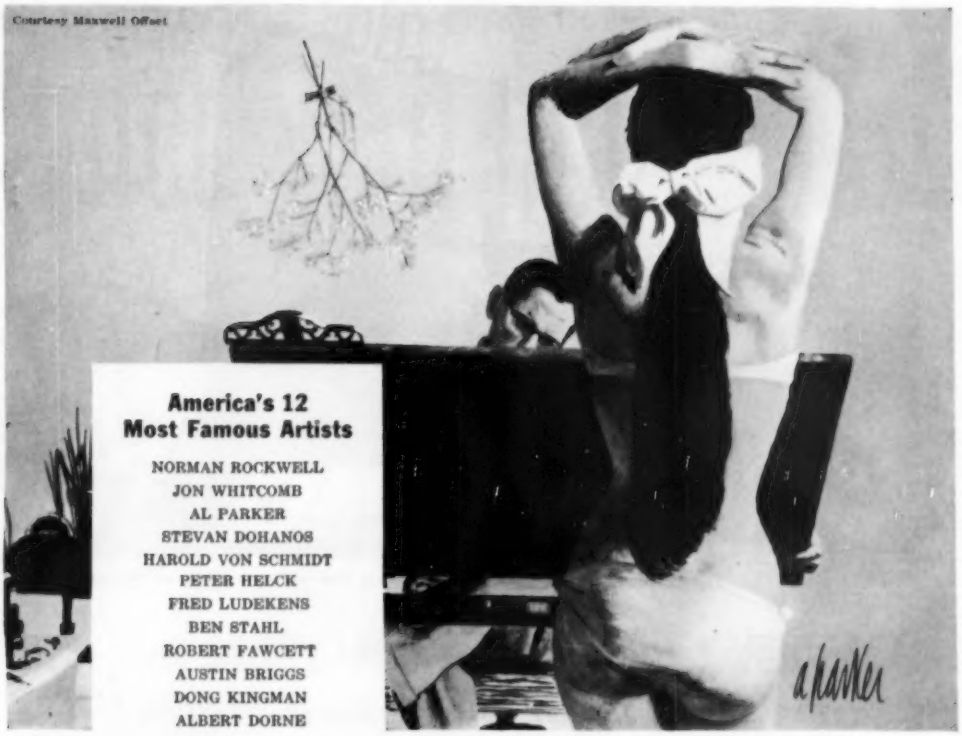
Giant Steel Fingers Pick Up Logs.....109
Electronics Stunt Makes Music.....110
Helicopter or Airplane?.....110
Multiple Photos Show Bombs' Behavior..111
Radar Pinpoints Enemy Mortars.....116
New Nylon Armor to Shield GIs.....116
Trains Made Safe from Small Boys.....117
Jet Is Revved Up Inside Hangar.....118
Planes Get Fast-Firing Rocket Guns.....118
Big Basket Transfers Men from Blimp....121
Machines Speed Rose Raising.....136
Wooden Sitter Holds Baby Safely.....136
Movie Tells the Inside Story.....137
Designers Make Trucks Do Tricks.....142
Pipeline's Wings Keep It Steady.....143
Bubbles Mark Trail of Atomic Bullets..143
Rocket Hoists Radar Target.....149
His House Is a Hangar.....149
Big Saw Has Power Steering.....150
"Dinghy" Scooter Is Mounted on Car....150
Lessons on Tape Teach Three "Rs".....159

Mechanics and Homebuilding

Going Fishing?.....183
8 Boating Tips.....184
How We Built a Corner Table.....194
Boat with Wheels Needs No Trailer.....196
Saw Cuts Hold Drill on Tubing.....196
Wringer Rollers Protect Boat.....197
Want to Make Gluing Clamps?.....197
Fuse-Box Shelf Takes Extra Supplies....198
Hose Stored for Use on Fire.....198
Washing-Machine Hose Makes Pump....220
Dog Tether Is Tangleproof.....220
Yard Tools Are Jacks-of-All-Trades.....223
Lazy Susan Turns Scrabble Board.....226
Jar Lid Paints Picket Bottoms.....226
Bar Breaks Tire Bead Loose.....227
Ruler Draws Large Circles.....227
3 Smart Kitchen Accessories.....228
Balsa Buoys Mark Mooring.....230
Twine Forms Spray Stencil.....230

Departments

Letters..... 12
Last-Minute News and Notes..... 94
Craftsmen at Work..... 96
New Ideas from the Inventors.....133
I'd Like to See Them Make.....155
New for Your Car.....174
New for the Handy Man.....175
Almanac for Motorists.....182
Wordless Workshop.....192
New Tools.....219
Keeping the Home Shipshape.....221
New Shop Ideas.....238
Hints from the Model Garage.....246



"WE'RE LOOKING FOR PEOPLE WHO LIKE TO DRAW," say America's 12 Most Famous Artists. Many men and women have hidden art talent they never dreamed of. They could be trained for success and security in the field of art if they only knew their own ability. We artists will help you discover your art talent free! Just send for our **FREE ART TALENT TEST.**

Thousands paid $1 to take this revealing 8-page test. It's yours FREE if you act at once. Mail the coupon NOW!

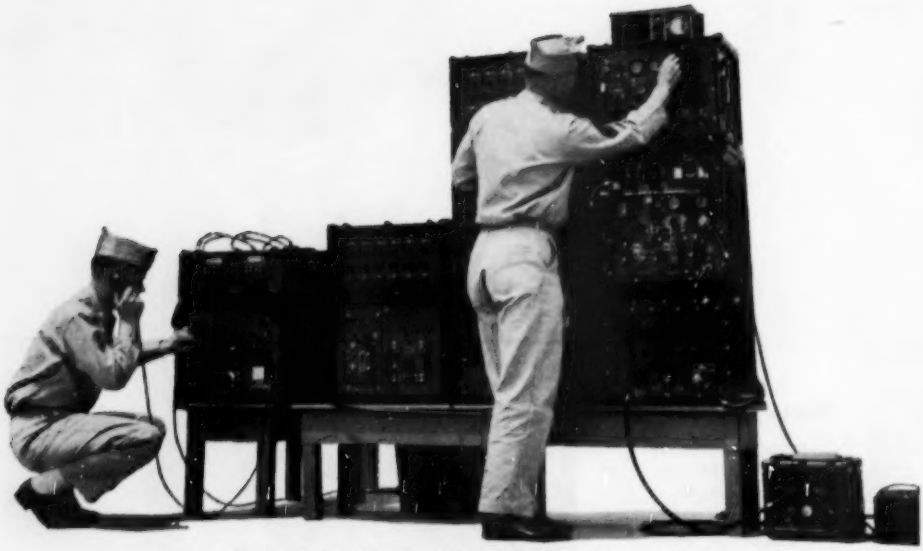
FAMOUS ARTISTS SCHOOLS
Studio 11-R, Westport, Conn.

Send me without obligation your Famous Artists Talent Test.

Mr.
Mrs. _____ Age _____
Miss (PLEASE PRINT)

Address _____

City _____ Zone _____ State _____



Tuning in for radio transmission. Each item of equipment is not much bigger than a suitcase.

A leapfrog telephone system for the Armed Forces!

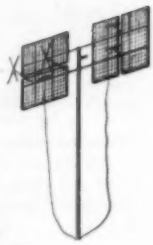
A new communications system, which takes to the air when water or rough terrain prevents the stringing of wires, has been developed for the U. S. Signal Corps by Bell Telephone Laboratories.

It uses cable and radio relay interchangeably over a 1000-mile range. It is easily portable, unaffected by climate, and rugged enough for global use. Twelve voices travel at once over a pair of wires or radio waves — as clearly and naturally as over the regular telephone system.

This is the first time a completely integrated wire and radio system of this large a channel capacity has been available for tactical use by the Armed Forces. It is already in production at Western Electric, manufacturing and supply unit of the Bell System.

The new system is a joint achievement of the Signal Corps, Bell Laboratories and Western Electric . . . one of the many results of long and fruitful co-operation. It shows again how techniques which the Laboratories develop contribute to our national strength.

Amplifiers like this are used every 5¼ miles in cable portions of the system. They are weatherproof, can be used on a pole or the ground, and will even work under water. The system uses a spiral wound cable developed by the Signal Corps.



Easily raised antennas send or receive for the raido links.

Bell Telephone Laboratories

Improving telephone service for America provides careers for creative men in scientific and technical fields

5 *reasons why* ACCOUNTANCY

offers you MORE MONEY . . . *and* SUCCESS!

REASON #1. If you were an expert accountant right now, chances are you would find yourself among the highest-paid of all professional men and women. Even back in "depression years," surveys showed that accountants earned more on the average than men in other major professions.

REASON #2. The demand for accountants is great—everywhere. All businesses must have trained accountants to cope with ever-growing requirements. It's a profession offering wide opportunity—always—to the man who knows.

REASON #3. You can fit into any business, anywhere in the country—because accounting principles are universal. Think what this means in terms of security and independence!

REASON #4. Accountancy is open to all. Any man or woman of good intelligence, who enjoys figure work and is willing to follow LaSalle's systematic "problem method" plan, can rapidly qualify for a highly profitable, enjoyable lifetime career . . . and he doesn't have to finish his training before beginning to "cash in."

LASALLE
417 S. Dearborn St.,
CHICAGO 5, ILL.

REASON #5. Without losing a day from your present work, you can prepare in spare hours at home, at low cost, under LaSalle's step-by-step "Problem Method" of "learning by doing." This famous plan accounts for LaSalle's remarkable record of having trained nearly 10 per cent of all Certified Public Accountants in the U. S. . . . and of having put many thousands of others into high-paying careers.

Send today for Free Sample Lesson and "Accountancy, the Profession That Pays." Learn about the five great fields of opportunity . . . and LaSalle's time-tested plan for helping men and women to rapid advancement, higher income, greater prestige and professional standing. The coupon below will bring this information to you—without cost or obligation.

MAIL THE COUPON—NOW
Member, National Home Study Council

GET FREE SAMPLE LESSON

LaSalle Extension University
A Correspondence Institution
Dept. 483H 417 S. Dearborn St., Chicago 5, Ill.

Please send me, free of all cost or obligation, a sample lesson in Accounting . . . also, your 48-page illustrated book, "Accountancy, the Profession That Pays."

Name ..... *Age* .....
Address .....
City, Zone, State .....

World Famous KORIUM Hunting Knives

Just arrived from Solingen, Germany

DIRECT FROM IMPORTER TO YOU
Take your choice—all one low price!

3.95

These unique hand forged hunting knives are made by world-renowned craftsmen of SOLINGEN, GERMANY. Sharp, rugged blades are genuine KORIUM steel. The handsome, unusual designs have won recognition in sports circles thruout Europe. American hunters and fishermen, too, have been quick in expressing their enthusiastic approval. Over 100,000 already sold here! Now you, too, can get your favorite design—direct from the importer at a rock-bottom price! The blades are actually sharp enough to shave with; will stand up against most rugged treatment. Genuine leather scabbards tailored for each knife—metal tipped for sharp pointed models. Lengths 9 to 10 inches. The tough, sturdy KORIUM steel made in Germany assures you years of dependable service. Their sleek graceful lines also provide ideal rec room or den decorations. Dandy gifts for men—and a sportsman's delight! Import supply limited. The low **3.95** price for both knife and scabbard means you'll have to act fast! Send **3.95** for prompt prepaid delivery, or order COD plus postage. Your money back if not delighted. Check desired model in coupon below.

SPECIAL! Swiss Army Knife

World-Famous Utility Knife

. . . deep-cut price . . .

World famous utility knife used by Swiss Army Officers—now made by West Germany's cutlery craftsmen! Recognized by sportsmen as the most compact multi-purpose tool ever devised. Only 3½ inches closed. No more searching for that needed tool! 10 precision-built tools always at hand! A "life-saver" for hunters, fishermen, hobbists, motorists, mechanics. Terrific value at 3.95. Order yours now!

FREE GENUINE LEATHER SHEATH

Not ordinary kind—but superfine leather sheath is supplied with your choice. Tailored to fit. Sharp pointed models have metal tip. Made with painstaking care by skilled workers. Order your knife NOW to avoid disappointment. Supply limited. Each knife is fully guaranteed to delight you, or your 3.95 back. First come, first served. RUSH coupon TODAY!

Deluxe Quality!

THORESEN'S, Dept. 7-D-800
352 Fourth Ave., New York 10, N. Y.

RUSH the KORIUM Knife checked in coupon below on 5-day home trial. If I am not delighted with the quality and value, I shall return it for FULL REFUND of my 3.95. ( ) 3.95 enclosed. Send postpaid. ( ) Send C.O.D. plus postage

CHECK MODEL DESIRED:

( ) A ( ) B ( ) C ( ) Swiss Army Knife

NAME.....

ADDRESS.....

CITY..... STATE.....

Jigs to Ships in a Jiffy!

ENTIRELY *New*

Funpacked FOLBOT *Way*

NOW for real Joy, Folbot's scientifically developed precision parts of handier size and FREE from stresses, *SET-UP so much EASIER* in shorter time. Smarter, seaworthy, more comfortable designs, ultra super construction with stronger, yet lighter materials GIVE YOU utmost portability to provide better, lifetime, lower cost boating anywhere.

7 portable, as well as folding Models, all sizes & colors, for YOUR EXACT requirements, available in compl. KITS,—or factory assembled for home finishing,—or factory finished DeLuxe. Folbot's lower factory prices and EASY STEPS start YOU right NOW.

Sensational GLIDER

lightest 2 to 3 seater, motors, paddles, sails like a feather.

BIG Sea Going FISHERMAN

ONLY 98 lbs. for One Man Car Loading seats 4 to 5 in most convenient, exclusive des. pat. V seats,—goes 22 mph with 7½ HP.

FREE FOLBOT

ACTION CATALOGUE MAIL COUPON TODAY!

©

TO: FOLBOT CORPORATION
STARK INDUSTRIAL PARK, PS CHARLESTON, S. C.

Name.....

Address.....

City..... State.....

New central heating system has

a thermostat in every room

Steam turbine operated fan in each room heater circulates filtered warm air. Thermostats are non-electric

Why didn't someone think of this long ago? Once in many years a new idea is born; one so simple, so logical, and so practical that it wins immediate and wide acceptance. People constantly tell us that the SelecTemp heating system is just such an idea.

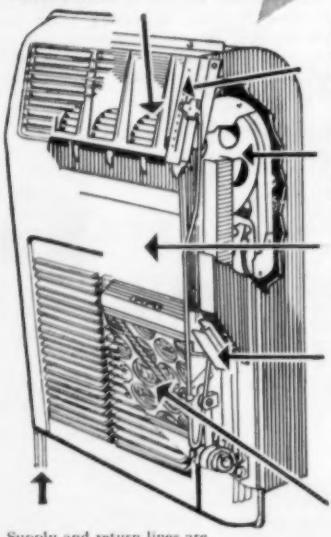
Home comfort beyond anything you've ever known. SelecTemp is the ultimate in modern heating—every *room* a *zone*, with its own thermostat. Every member of the family has just-right warmth, from 65° or so in mother's busy kitchen to tropical warmth for grandmother. Each room has a separate steam-fed heating unit, which constantly circulates filtered warm air. There is no wiring; fans and thermostats are non-electric. (*See diagram at right.*)

Economically installed. Fuel cost low. SelecTemp heating is very economically installed in new or old homes or buildings, since small flexible copper tubing carries steam to room units. SelecTemp eliminates *overheating* and *unnecessary* heating. Rooms not in use can be kept cool and quickly reheated when wanted. SelecTemp boiler with immersion coils will provide plenty of hot water, winter and summer, at low cost.

Continuous, *modulated* heat. The speed of the fan and the amount of steam supplied are constantly and automatically adjusted to room needs. No more heat than is needed, and no less. No pop-on, pop-off. Just steady heat, *accurately* metered.

Learn more about this revolutionary heating system. Mail the coupon. You will receive a 32-page booklet "12 Plans for Home Heating," describing SelecTemp heating, as well as accurate information on all principal types of modern heating.

SelecTemp room units, only 18 inches high, are recessed into wall and can be painted to match color scheme. Three sizes: 6,000, 12,000, and 18,000 Btu output.



IRON FIREMAN®

SelecTemp®

MODULATING ZONE HEATING

CLIP AND MAIL

IRON FIREMAN MANUFACTURING COMPANY
3016 West 106th Street, Cleveland 11, Ohio.
In Canada: 80 Ward Street, Toronto, Ontario.
Please send me your free booklet "12 Plans for Home Heating."

Name_____

Address_____

City_____ Zone____ State_____

I Will Send You BOTH FREE

J. E. SMITH, President
National Radio Institute
Washington 9, D. C.

See How I Train You at Home in Spare Time for Good Pay Jobs in RADIO-TELEVISION

You Practice Broadcasting with Equipment I Send

As part of my Communications Course I send you kits of parts to build the low-power Broadcasting Transmitter shown at left. You use it to get practical experience putting this station "on the air," to perform procedures required of broadcasting station operators. An FCC Commercial Operator's license can be your ticket to a better job and a bright future. My course gives you the training you need to get your license. Mail coupon below. See in my book other valuable equipment you build and keep.

You Practice Servicing with Equipment I Send

Nothing takes the place of PRACTICAL EXPERIENCE. That's why NRI training is based on LEARNING BY DOING. You use kits of parts I furnish to build many circuits common to both Radio and Television. With my Servicing Course you build the modern receiver shown at right. You also build an Electronic Multitester which you can use to help fix sets while training at home. Many students make $10, $15 a week extra fixing neighbors' sets in spare time, starting soon after enrolling. I send you special booklets that show you how to fix sets. Mail coupon for 64-page book and actual Servicing Lesson, both FREE.

TRAINING plus OPPORTUNITY is the PERFECT combination. The sample lesson I send will prove to you that it is practical to keep your job while TRAINING right in your own home for better pay and a brighter future. My 64-page book should convince you that Radio-Television is truly today's field of OPPORTUNITY.

TELEVISION MAKING JOBS, PROSPERITY

Radio, even without Television, is bigger than ever. 115 million home and auto Radios create steady demand for service. 3000 Radio stations give interesting, good pay jobs to operators, technicians. NOW ADD TELEVISION. 25 million Television homes and the total growing rapidly. 200 Television stations on the air and hundreds more under construction. Color Television soon to be a reality. Government, Aviation, Police, Ship, Micro-wave Relay, Two-way Communications for buses, taxis, trucks, railroads are growing fields providing good jobs for men who know Radio-Television. All this adds up to good pay now, a bright future later for men who qualify.

START SOON TO MAKE $10, $15 A WEEK EXTRA

An important benefit of Radio-Television training is that you can start to cash in fast. Many men I train fix neighbors' sets, make extra money, starting soon after they enroll. Multitester built with parts I send helps locate and correct set troubles. Read at left how you build actual equipment that gives you practical experience, brings to life, what you learn from my lessons.

MEN OF ACTION NEEDED MAIL COUPON TODAY

Act now to enjoy more good things of life. Get the benefit of my 40 years' experience training men at home. Take NRI training for as little as $5 a month. Many NRI graduates (some with only a grammar school education) make more in two weeks than the total cost of training. Find out about this tested way to better pay. Mail coupon below today for Actual Lesson and 64-page Book—BOTH FREE. J. E. SMITH, President, National Radio Institute, Dept. 5DB, Washington 9, D. C. OUR 40TH YEAR.

I TRAINED THESE MEN AT HOME

"Started repairing Radios six months after enrolling. Earned $12 to $15 a week spare time."—ADAM KRAMLIK, JR., Sumneytown, Pennsylvania.

"I've come a long way in Radio and Television since graduating. Have my own business on Main Street."—JOE TRAVERS, Asbury Park, New Jersey.

"Manager of meat market when I began. Answered ad for Radio serviceman. Got job. Pay increased 50% in year."—C. CARTER, San Bernardino, California.

"Am with WCOC. NRI course can't be beat. Passed exam for first class Radiophone license with no trouble at all."—JESSE W. PARKER, Meridian, Miss.

"Am with WNBT as video control engineer on RCA color project. Owe a lot of my success to your textbooks."—WARREN DEEM, Malverne, N. Y.

AVAILABLE TO **VETERANS** UNDER GI BILLS

Good for Both-FREE

Mr. J. E. SMITH, President, Dept. 5DB
National Radio Institute, Washington 9, D. C.

Mail me Sample Lesson and 64-page Book, FREE. (No salesman will call. Please write plainly.)

Name _____ Age _____

Address _____

City _____ Zone _____ State _____

VETS write in date of discharge

AFTER SHAVING

Dims Shine
Feels Fine
Doesn't Show

Also available in Canada

Finishing touch for every shave!
Neutral tint – crisp scent!

MENNEN
AFTER-SHAVE TALC
FOR MEN

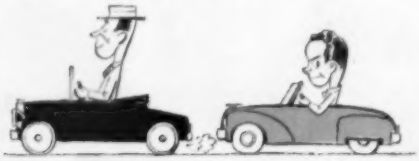
Letters—

Teen-Agers Are People

I am a teen-ager, and I drive.

In your February issue [p. 216] you show a device intended to limit accelerator pedal travel of a car. The device would be locked in place when a teen-ager is behind the wheel, and would be unlocked for adults.

This is as unsafe a device as I have seen for a long time. There are many times when a little extra torque, obtained by floorboarding the accelerator, can pull you out of a tight situation. What happens if you want to pass another car on a two-lane road? Are you supposed to live in that oncoming traffic lane and endanger your own and other lives? Or are you supposed to crawl behind the



creeper for miles just because you happen to have a few less birthdays under your belt than the next guy? No person, teen-aged or otherwise, should operate any vehicle over which he does not have complete control.

If a parent thinks that his son or daughter can't be trusted with an automobile, then that teen-ager shouldn't be allowed to drive. The parent is not doing his kid any favors by letting him use what amounts to an unsafe auto.

Please stop dividing American drivers into three classes: men (considered great), women (look out), and teen-agers (absolute poison).

EDWIN G. SOLOV, Flushing, N. Y.

Not "Independent" Enough

Between 1946 and 1952 I bought seven cars, the majority of which were "independents." I did this in search of mechanical improvements which I felt would be more

STEP UP YOUR PAY

Learn to Fix Appliances

AT HOME IN SPARE TIME

Fast Growing Field for Men Who Know This Profitable Trade

Get into a field where there is important work and the security that comes from knowing a good trade. The electrical appliance repair business offers OPPORTUNITY FOR YOU. Every wired home today has an average of 8 electrical appliances. Up to 10 million new appliances are sold every year. Owners pay well to keep them in repair and enjoy the convenience they provide. Here's your chance to qualify for a better job or be your own boss!

You Learn and Earn With Appliance Tester You Get

This course includes the parts to build a portable, sturdy Appliance Tester that helps you locate electrical defects quickly and easily. You use it to learn and do actual electrical and appliance repair jobs. It helps put you in the professional technician's class. Use it to start making money doing repairs soon after beginning the course.

Pick Up $3, $4, $5 an Hour in Spare Time Starting Soon

Start soon to fix electric toasters, clocks, fans, vacuum cleaners, etc., for neighbors and friends. Work in your basement, garage, or spare room. Earn $3 to $5 an hour *in your spare time*. See how easy it is to increase your earning power—how you can pay for this training many times over with your spare time earnings.

Train Now for Greater Security Low Price—Easy Terms

The day when the tinkerer could do the job is past. Today's automatic electrical appliances need expert servicing. Start now to learn a good trade like appliance repairing. No need to give up your present job while you train. Only $2.50 starts you, and you pay only $5.00 a month. A small price to pay for increased earnings, a more secure future. Mail coupon now.

Find Out about Your Opportunities in Electric Appliance Servicing

Actual lesson we send to prove home training is practical. Book tells more about Electric Appliance industry, gives details of our training. Address: Electrical Appliance Training, National Radio Institute, Dept. BD5, Washington 9, D.C.

FREE LESSON and BOOK —MAIL THIS NOW

NATIONAL RADIO INSTITUTE
Dept. BD5, Washington 9, D. C.

Please send me Electric Appliance Training lesson and book free. (No salesman will call.)

Name _____ Age _____

Address _____

City _____ Zone _____ State _____

PERMATEX
COOLING SYSTEM
CLEANER and CONDITIONER

Clean out your cooling system this spring the easy all-in-one way with all new Permatex Cooling System Cleaner and Conditioner. Cleans out rust and scale—puts grease and oil in suspension and carries it out—and, as a plus, prevents rust from re-forming and seals all leaks. Two compartment containers with cleaner in top and rust preventative, sealer, and neutralizer in bottom.

There's No Other Product Like It!

PERMATEX COMPANY, Inc.
Brooklyn 35, New York — Kansas City 15, Kansas

OVER 50 CHEMICAL PRODUCTS FOR BETTER AUTOMOTIVE MAINTENANCE

likely to come from the "underdogs" of the industry.

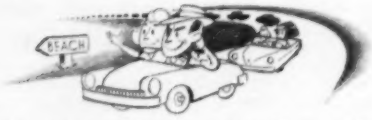
One time in all those years I got partly what I bargained for. As a rule the independents were simply aping the Big Three.

I sincerely feel for the "small" car maker: I am a small businessman myself—really small in comparison to them. But I wonder if these firms deserve to survive if all they can accomplish is to build a car as good—at best—as the Big Three.

ERIC REISFELD, Silver Spring, Md.

A New Calendar? Some Vote "No"

In regard to your article on the new World Calendar [Jan., p. 110], I believe the increase in the number of three-day holiday



weekends would increase traffic accidents. Give the public more long weekends to travel on and we will raise our accident rate. Otherwise the calendar sounds good to me.

JOSEPH A. BOLSTER, S. Easton, Mass.

. . . I should like to voice my objection. This calendar with its roaming religious day would bring hardship to people who are adherents to the seventh day of worship.

HARRY J. FUNK, Collegeville, Pa.

Divide, Don't Multiply

In your December article, "Calipers Give Radius of Segments" [p. 222], you incorrectly state "Read the caliper and divide the reading by half." Dividing "by half" would actually multiply the number by two. Your statement should read "divide *in* half" or "divide by two."

A. E. CLARO, Norwalk, Conn.

Sky Show Enrolls PSM Picture

Could you, please, satisfy a PSM fan's curiosity?

A striking color picture of the sun as it appears to radio telescopes was projected recently at the Hayden Planetarium. It looked like the illustration in your July 1954 issue, accompanying a British scientist's article on radio astronomy [pp. 80-81]. Did the Planetarium use your picture?

GEORGE HARRINGTON, NYC

Yes. This picture was the work of a POPULAR SCIENCE MONTHLY *artist, from*

INVENTORS

Learn how to protect your invention. The U. S. Patent Laws provide that any new and useful art, machine, article of manufacture, or composition of matter, or any new and useful improvement thereof, may be patented if the act of invention is involved. Therefore, every inventor with a valuable invention should take advantage of the Patent Laws and proceed for patent protection in order to safeguard his rights.

A patent gives the inventor the exclusive right to prevent others from making, using, or selling the invention claimed in the patent for a period of seventeen years.

The Patent Laws were enacted for the benefit of the inventor to give him protection for the features of his invention which are patentable. These features must be properly and concisely set forth and claimed in a formal application for patent, in order to comply with the requirements of the Patent Laws. For that reason, unless the inventor is familiar with patent matters, he should engage a competent registered patent attorney or agent to represent him. We are registered to practice before the U. S. Patent Office and are prepared to serve you in the handling of your patent matters.

A specially prepared booklet entitled "Patent Guide for the Inventor", containing detailed information with respect to patent protection and procedure, together with a "Record of Invention" form will be promptly forwarded to you without obligation upon request.

CLARENCE A. O'BRIEN & HARVEY JACOBSON

Registered Patent Attorneys

52-D DISTRICT NATIONAL BUILDING

WASHINGTON 5, D. C.

editorial-staff sketches, and we feel complimented by its use in one of the Hayden Planetarium's renowned sky shows.

No Time to Lose

Please return my Geiger counter to me as soon as you have obtained your photographs. There have been new uranium finds near here.

EDWARD J. GAUSS
University of Colorado, Boulder, Col.

The article describing Mr. Gauss's Geiger counter appears on p. 231 of this issue.

Lincoln Hesitated Too Long

Pardon my curiosity, but will someone kindly tell me why Henry Ford installed wrap-arounds in most of his '55s but left his pride and joy, the Lincoln, with last year's curved windshield [Dec. '54, p. 135]?

L. A. HEIDE, LeRoy, Sask.

The sheet-metal die shops in the Detroit area were overloaded with work for a year prior to the announcements of the '55 cars. Lincoln delayed a decision on the kind of wrap-around it wanted until the die shops were too busy to handle Lincoln's order.

Old Idea from the Inventors

That long-handled tire marker for motorcycle cops checking on parked cars ["New Ideas from the Inventors," Feb., p. 147] may be new to you, but it's old stuff to Salt Lake City policemen. They have been using it for years. When it comes to handing out

traffic tickets Salt Lake City policemen are always first with the fastest.

REID E. BUSHMAN, Salt Lake City

Only the Timing Was Wrong

Did Devon Francis make a mistake on the horsepower ratings of the Cadillac [Dec. '54, p. 135]? I have a Cadillac booklet that states that the regular Caddy has 250 hp. and the Eldorado 270. Who is right?

JERRY BROCATO, Pensacola, Fla.

Oddly enough, both. At the time PSM *went to press, Cadillac was figuring on 240*

"No grizzly-bear hair for me! I keep my hair neat all day the new greaseless way"

NEW VITALIS WITH V-7 MAKES EVEN DRY, UNRULY HAIR EASY TO MANAGE

V-7, the *greaseless* grooming discovery now in Vitalis, outdates messy oils. Keeps your hair neat, yet you never have an over-slick, plastered-down look.

What's more, Vitalis gives you wonderful protection from dry, brittle hair and parched scalp—even after a shampoo. Try it—you'll like it!

VITALIS®
Hair Tonic with V-7®

ANOTHER FINE PRODUCT OF BRISTOL-MYERS

INVENTORS

If you believe that you have an invention, you should find out how to protect it. The first step is to have a search made of the prior pertinent U. S. patents. If a report on this search indicates that the invention appears patentable you can apply for a patent, and the specifications and claims should be prepared.

The firm of McMorrow, Berman & Davidson, with offices in Washington, D. C., is qualified to take the necessary steps for you. We can make a preliminary search on your invention, advise you whether we think it can be patented, and prepare your application for patent.

Unless you are fully familiar with the U. S. Patent Laws, we recommend that you engage the services of a Registered Patent Attorney to protect your interests. The patent laws are *your* laws. A patent gives you the right to prevent others from making, using or selling the invention claimed in your patent for a period of 17 years.

Use these patent laws for your protection. Investigate whether your invention can be patented. If you have what you believe to be an invention, we suggest that you have this firm make a search for you.

Send for a copy of our Patent Booklet entitled "How To Protect Your Invention," containing information about patent protection and patent procedure. Along with this we will also send you an "Invention Record" form, for your use in writing down and sketching details of your invention. We will mail them promptly. No obligation. They are yours for the asking.

McMORROW, BERMAN & DAVIDSON

Registered Patent Attorneys

PATENTS • COPYRIGHTS • PATENTS

142-C VICTOR BUILDING, WASHINGTON 1, D. C.

There's one BIG difference in furnaces today...

• This thermo-coil is the "brain" of Regulaire*. It automatically operates a regulating vane, found only on Perfection furnaces. It ends cold, drafty floors and eliminates harsh, uneven blasts of air.

Here's how it works:

1. The blower vane is closed as the furnace comes on. It permits only a quiet, gentle stirring of warmth without cold or hot blasts.

2. As heat output increases, the automatic vane opens slowly, increasing the flow of warmth into your living area.

3. Vane fully open for full flow of heat.

For complete information on how Perfection with Regulaire delivers *full time* comfort, write for free booklet, "If It's Comfort You Want". Perfection Stove Company, 7638-B Platt Avenue, Cleveland 4, Ohio.

*Pat. pending

YOUR HOME DESERVES
Perfection
AUTOMATIC HEATING

hp. for the standard job and 265 for the optional engine in the Eldorado convertible. Both were hiked at the last minute before they were shown to the public.

He Catches Catfish, No Doubt

A friend of mine, a successful salt-water fisherman, attributes his luck to a trick way of using "chum." He takes a can of cat food, punches it full of small holes and tows it

behind his boat. The fish are attracted to the cat food, he claims, and get caught on his baited hooks.

R. M. Woodbury, Natick, Mass.

Carrier Planes in the Air Force?

In "How to Make a Jig-Jet Puzzle" [Jan., p. 207] you mentioned the Panther jet plane, and in front of it was the term "Air Force." I've always been under the impression that only the Navy used the Panther.

Walter Cohen, Patchogue, N. Y.

Right. It's a carrier-based Grumman fighter.

They Already Make 'Em

In your page, "I'd Like to See Them Make" [Dec. '54, p. 149], Mr. R. R. Rundell, Miami, asked for "A special shank, one end shaped to fit bit braces, the other square to take sockets." For more than a year we have been manufacturing this item.

J. A. Gardner, President
Cincinnati Tool Co., Cincinnati

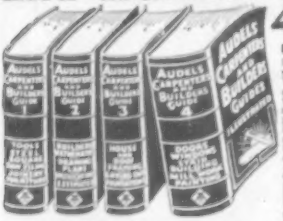
Dazzling Burst of Speed

You state that the Olds digs from 0 to 60 in 10.8 seconds [Dec. '54, p. 124] and you award it the "take-off title." Last year's Buick Century got there in 10.6 with no alterations on the transmission, and certainly the '55 can burn faster than a '54. What about it?

William G. Kyle, New Orleans

That take-off you report must have been the record of the century, if you'll pardon the pun. The best that the Century could do on the Popular Science *stop watch was 12.3 seconds, 0 to 60.*

AUDELS Carpenters and Builders Guides



4 vols. $6

Inside Trade Information for Carpenters, Builders, Joiners, Building Mechanics and all Woodworkers. These Guides give you the short-cut instructions that you want—including new methods, ideas, suggestions, plans, systems and money saving suggestions. An easy progressive course for the apprentice and student. A practical daily helper and Quick Reference for the master worker. Carpenters everywhere are using these Guides as a Helping Hand to Easier Work, Better Work and Better Pay. To get this assistance for yourself, simply fill in and mail FREE COUPON below.

Inside Trade Information On:

How to use the steel square—How to file and set saws—How to build furniture—How to use a miter box—How to use the chalk line—How to use rules and scales—How to make joints—Carpenters arithmetic—Solving mensuration problems—Estimating strength of timbers—How to set girders and sills—How to frame houses and roofs—How to estimate costs—How to build houses, barns, garages, bungalows, etc.—How to read and draw plans—Drawing up specifications—How to excavate—How to use settings 12, 13 and 17 on the steel square—How to build hoists and scaffolds—skylights—How to build stairs—How to put on interior trim—How to hang doors—How to lath—lay floors—How to paint.

AUDEL, Publishers, 49 W. 23rd St., New York 10, N. Y.

Mail Audels Carpenters and Builders Guides, 4 vols., on 7 days' free trial. If OK I will remit $1 in 7 days and $1 monthly until $6 is paid. —Otherwise I will return them. No obligation unless I am satisfied.

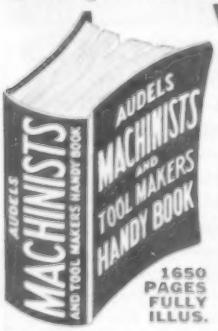
Name_____

Address_____

Occupation_____

Employed by_____ S4

WHAT Every MACHINIST Wants to Know



1650 PAGES FULLY ILLUS.

A SHOP COMPANION

For Every Machinist, Toolmaker, Machine Operator, Draughtsman, Metal Worker, Mechanic and Student. A Key to Modern Shop Practice In All Branches

SOLVES YOUR PROBLEMS ANSWERS 1001 QUESTIONS

Tells How to Make tools, How to Operate and Set-Up Lathes, How to Lay Out Screw & Milling Machines, Shapers, Drill Presses & All Machine Tools.

QUICK READY REFERENCE PRACTICAL INSIDE INFORMATION

Highly Endorsed—covers How to lay out, How to cut threads; How to make taps & dies, gears, etc; How to operate boring & milling machines, How to set up grinders, automatic screw machines, How to calculate—How to Use Slide Rule, How to read Blueprints, etc. A timely Book and ready helper.

$4 COMPLETE • PAY ONLY $1 A MONTH

Get This Information For Yourself. Mail Coupon Today. No Obligation Unless Satisfied. ASK TO SEE IT!

FREE EXAMINATION COUPON

AUDEL, Publishers, 49 W. 23 St., New York 10, N.Y.

Mail AUDELS MACHINISTS & TOOLMAKERS HANDY BOOK. Price $4 on 7 Days Free Trial. If O.K. I will remit $1 in 7 days and $1 monthly until $4 is paid. Otherwise I will return it.

READ FOR PROFIT!

Name_____

Address_____

Occupation_____

Employed by_____ S4

WHAT ALL AUTO MECHANICS WANT TO KNOW

1664 PAGES

This Big Practical Book gives full information with working diagrams covering the principles, construction, ignition, service and repair of modern cars, trucks and buses.

Diesel Engines, Hydramatic & Fluid Drives Fully Explained.

A complete Guide of 1664 pages, with over 1500 illustrations showing inside views of working parts, with instructions for service jobs.

IT PAYS TO KNOW

How to fit pistons—How to locate engine knocks, How to fit connecting rod bearings—How to service main bearings—How to recondition valves—How to time valves—How to adjust fan belts—How to adjust carburetors and chokes, How to rebuild a clutch—How to service automatic transmissions—How to service brakes—How to adjust steering gear—How to cope with ignition troubles—How to service distributors—How to time ignition—How to "tune up" an engine.

$4 COMPLETE • PAY $1 A MO.

TO GET THIS ASSISTANCE FOR YOURSELF SIMPLY FILL IN AND MAIL COUPON TODAY.

Step up your own skill with the facts and figures of your trade. Audels Mechanics Guides contain Practical Inside Trade Information in a Handy Form. Fully illustrated and Easy to Understand. Highly Endorsed. Check the book you want for 7 DAYS FREE EXAMINATION. Send No Money. Nothing to pay postman.

MAIL ORDER

Check NOW!

You Can Look Over Any Guide In Your Own Home — Start the Easy Payments If Satisfied

MAIL THIS TODAY

AUDEL, Publishers, 49 W. 23 St., NEW YORK 10, N. Y.

Please send me postpaid for FREE EXAMINATION books marked x below. If I decide to keep them I agree to mail $1 in 7 Days on each book or set ordered and further mail $1 monthly on each book or set until I have paid price, otherwise I will return them.

- ☐ AUTOMOBILE MECHANICS GUIDE, 1664 Pages $4
- ☐ TRUCK & TRACTOR GUIDE, 1299 Pages 4
- ☐ DIESEL ENGINE MANUAL, 575 Pages 2
- ☐ MACHINISTS HANDY BOOK, 1650 Pages 4
- ☐ WELDERS GUIDE, 400 Pages 1
- ☐ BLUE PRINT READING, 416 Pages 2
- ☐ MATHEMATICS & CALCULATIONS, 700 Pages 2
- ☐ SHEET METAL PATTERN LAYOUTS, 1100 Pages 4
- ☐ SHEET METAL WORKERS HANDY BOOK, 388 Pgs. 1
- ☐ MECHANICAL DRAWING GUIDE, 160 Pages 1
- ☐ MECHANICAL DRAWING & DESIGN, 480 Pages 2
- ☐ AIRCRAFT WORKER, 240 Pages 1
- ☐ TELEVISION SERVICE MANUAL, 434 Pages 2
- ☐ RADIOMANS GUIDE, 1040 Pages 4
- ☐ ELECTRONIC DEVICES, 216 Pages 2
- ☐ ELECTRIC MOTOR GUIDE, 1000 Pages 4
- ☐ WIRING DIAGRAMS (Light & Power), 272 Pgs. 1
- ☐ ELECTRICIANS EXAMINATIONS, 250 Pages 1
- ☐ ELECTRIC POWER CALCULATIONS, 425 Pages 2
- ☐ HANDY BOOK OF ELECTRICITY, 1440 Pages 4
- ☐ ELECTRIC DICTIONARY, 9000 Terms 2
- ☐ ELECTRIC LIBRARY, 7000 Pages (12 Book Set) 18
- ☐ SHIPFITTERS HANDY BOOK, 256 Pages 1
- ☐ REFRIGERATION & Air Conditioning, 1280 Pgs. 4
- ☐ MILLWRIGHTS & MECHANICS GUIDE, 1200 Pgs. 4
- ☐ POWER PLANT ENGINEERS GUIDE, 1500 Pages 4
- ☐ ENGINEERS & FIREMANS EXAMS, 525 Pages 1
- ☐ PUMPS, Hydraulics & Air Compressors, 1658 Pgs. 4
- ☐ OPERATING ENGINEERS LIBRARY (3 Books) 9
- ☐ MECHANICAL DICTIONARY, 950 Pages 4
- ☐ GARDENERS & GROWERS GUIDES (4 Book Set) 6
- ☐ CARPENTERS & BUILDERS GUIDES (4 Book Set) 6
- ☐ PLUMBERS & Steamfitters Guides (4 Book Set) 6
- ☐ MASONS AND BUILDERS GUIDES (4 Book Set) 6
- ☐ PAINTERS & DECORATORS MANUAL, 450 Pgs. 2
- ☐ HOUSE HEATING GUIDE, 1000 Pages 4
- ☐ OIL BURNER GUIDE, 384 Pages 1
- ☐ HOME APPLIANCE SERVICE GUIDE, 800 Pages 4

Name_____

Address_____

Occupation_____

Employed by_____ S4

FREEZES ACTION

AT 1/1400 OF A SECOND

GRAFLEX-MADE STROBOFLASH I

FOR THE CAMERA HOBBYIST AND PROFESSIONAL

Now, almost any camera with built-in synchronization can stop action at 1/1400 of a second, with Stroboflash I, a feature that makes this portable electronic flash welcome equipment for your photographic hobby or profession. In addition: capable of thousands of economical flashes without changing bulbs. Soft light captures highlight detail. Equally good for color or black and white.

Duration of flash: 1/1400 second. Capacitor recharging rate: 3-5 seconds. Guide numbers for color: 28 to 35. Power pack, enclosed in a scratch-proof Royalite case, small enough to fit into coat pocket.

See your local Graflex dealer today. You'll find his name in the Classified Telephone Directory.

ONLY $104.90 WITH BATTERIES AND BRACKETS

Available in Larger Models Stroboflash II and III

For further information write: Dept. PS-45
GRAFLEX, INC., ROCHESTER 8, N. Y.

GRAFLEX® *Prize-Winning Cameras*

Holt's WORLD FAMOUS "Do-It-Yourself" PRODUCTS

HOLT'S ORIGINAL **Piston Seal** TRADE MARK

does help in **6** *important ways*

1 - reduces oil consumption
2 - restores compression
3 - stops piston slap
4 - increases miles per gallon
5 - improves performance
6 - makes engine quieter

Good for 10,000 miles of carefree driving. Next best thing to a complete motor overhaul . . . at 1/20 the cost. Today's biggest seller. Millions of tubes have been sold throughout the World during the past 18 years. Undeniably safe for even the finest engines. Endorsed by leading technical automotive experts. Easy to use. Costs less than $5.

$1.69 CAN

Holt's **GUN-GUM MUFFLER SEAL** PLASTIC

Mends leaky mufflers—seals pipes and joints

Sets like a weld in a few minutes. Apply by hand

At Every Auto and Accessory Store

TREGLOWN CO., Inc.
Fanwood 18, N. J.
CANADA: 1366 Greene Ave., Montreal 6

Write for full details

Prices slightly higher in Canada

New Stock of First Quality

TELTRON TUBES

GUARANTEED! . . . LOWEST PRICES EVER!

FREE BONUS OFFER!

Model 625K

- Illum. gear-driven "speed Rollchart"
- New lever-action switches for individual testing of every element
- Tests all conventional and TV tubes

This Eico Tube Tester is yours FREE when you buy $199 worth of tubes or more within 60 days at Teltron.

May be bought outright from Teltron for **$34.95**

SPECIALS

Type	Price	Type	Price
1X2	.57	6SK7	.39
5U4G	.38	6SQ7	.34
6AQ5	.41	6W4GT	.37
6BA6	.49	12AT7	.67
6BK7	.67	12AX7	.55
6BQ6GT	.75	25BQ6GT	.71
		35Z5GT	.29
		50C5	.41
6CD6G	.99	50L6GT	.41
6SA7	.39	1629	.25

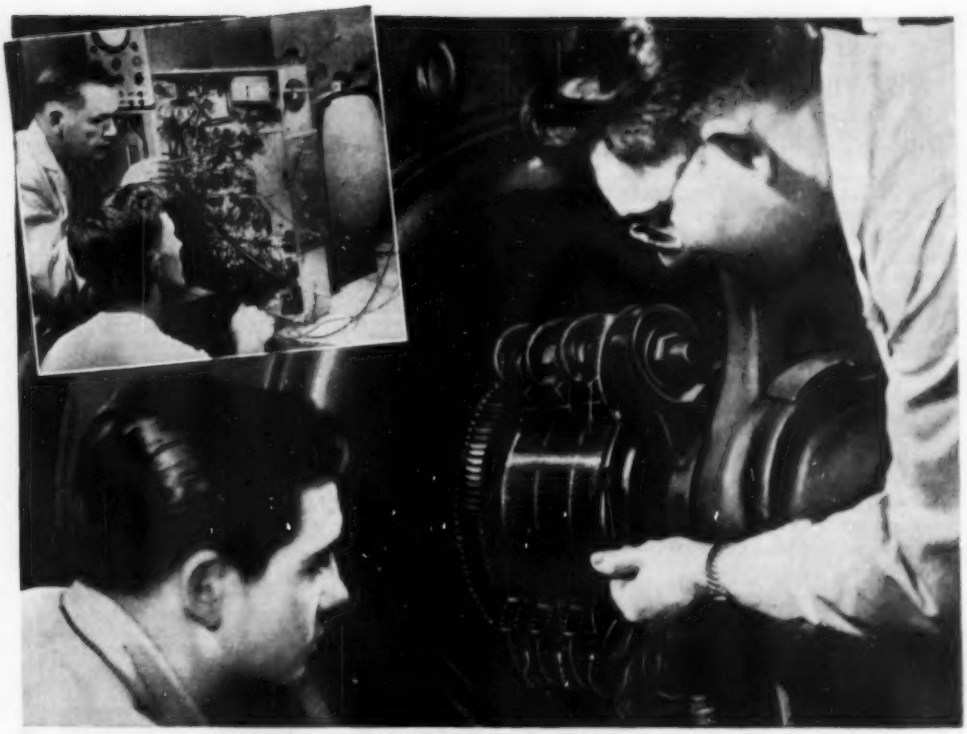
Send for Free complete tube listing and monthly specials! Get on our mailing list.

FREE $7.20 list value Bonus Box of three 6SN7 tubes and 25 assorted resistors with each order of $25 or more.

SAME DAY SERVICE **48 Hour Postal Delivery To West Coast**

Send check, cash or money order. No C.O.D.'s, please. No minimum order. Postage prepaid. Send for full complete tube listing.

TELTRON ELECTRIC COMPANY
428 Harrison Ave., Harrison, N. J.
Dept. PS-4 **Humboldt 4-9848**



TRAIN FOR A FUTURE IN

Electricity or Television-Radio

IN GREAT SHOPS OF COYNE—
Largest, Oldest, Best Equipped School Of Its Kind In The U. S.

Prepare quickly at Coyne for a career with a future!

Whether 17 or up to 45 years of age, prepare for your future now. Don't be satisfied with a "No Future" job. Train the Coyne way for a better job *in a field that offers a world of opportunities in the years ahead.*

APPROVED FOR VETERANS

WE TRAIN YOU IN CHICAGO

Learn the easier, practical way at *Coyne*, on real, full size equipment. No advanced education or previous experience needed. You learn *better* the *Coyne* way.

Train in the shops of Coyne—where thousands of successful men have trained for over 56 years—*Coyne is the largest, oldest, best equipped school of its kind*—established in Chicago in 1899.

FINANCE PLAN Enroll now. You may pay most of tuition later. We have a *special plan for men of draft age.*

CLIP COUPON NOW for big new illustrated *Coyne* book. No obligation; *no salesman will call.* Get vital facts now!

B. W. COOKE, Pres. **COYNE ELECTRICAL SCHOOL** FOUNDED 1899

A TECHNICAL TRADE INSTITUTE OPERATED NOT FOR PROFIT
500 S. PAULINA ST., CHICAGO, Dept. 45-73H
ELECTRICITY ★ RADIO ★ TELEVISION ★ REFRIGERATION ★ ELECTRONICS

Mail Coupon Today for

BIG FREE BOOK

"Guide to Careers in ELECTRICITY and TELEVISION-RADIO"

B. W. COOKE, President
COYNE ELECTRICAL SCHOOL
500 S. Paulina St., Chicago 12, Ill., Dept. 45-73H

Send BIG FREE book and details of your training offer. This does not obligate me and no salesman will call. I am interested in:

☐ ELECTRICITY ☐ TELEVISION-RADIO

Name.....

Address.....

City..... State.....

Why you should clean your car's cooling system NOW

YOUR car's radiator and cooling system need a good cleaning twice a year—and Spring is one of the best times to do this job. That's because you probably still have your winter anti-freeze in, and automotive engineers agree that anti-freeze should be drained when Winter's over.

Here's why: Anti-Freeze, while very valuable in the winter, does not have as effective heat transfer properties as water. It makes your engine run hotter, especially in the Spring and Summer, and has the effect of cutting up to 6 points from the octane rating of your gasoline. And this reduction in octane rating can mean the equivalent of a loss of 1½ gallons of premium gasoline in every tankful!

What goes on inside?

Ideally, your cooling system is a closed or sealed system. Exhaust gases, however, often get into the coolant, forming acids that corrode metal parts. Rust and scale also form due to the natural characteristics of water. And although your *anti-freeze* may be permanent, the *rust inhibitor* in it is not! So you have the second problem: you must take steps to clean out old rust, scale and grease, and keep them from forming in the future.

What can you do about it?

Here's what the Society of Automotive Engineers recommends, "Where anti-freeze has been used, drain the solution in the spring; flush the system thoroughly and clean if necessary; then install a fresh filling of summer rust inhibitor and water."

A message in behalf of your car engine from...

OLIN MATHIESON
CHEMICAL CORPORATION

Automotive Products Department
Baltimore 3, Maryland

Makers of Pyro Radiator Chemicals
U. S. I. Permanent and Super Pyro® Anti-Freezes

start a big profit business with a small investment
EARN UP TO $200 a DAY

Manufacturing Exciting New
RAINBOW ROCK
Concrete Slump Brick in your back yard

Earn big building boom profits with Rainbow Rock, the colorful new building brick that's taking the country by storm. Sell all you can make to contractors, builders, building supply houses. RAINBOW ROCK CUTS LABOR COSTS BY 1/3! Amazing low cost machine makes modern slump brick 24" long (3 times the length of ordinary brick) in a variety of widths and pastel colors . . . up to 1500 bricks a day! NEEDS NO SPECIAL SKILL. Operates indoors or out. Full instructions and valuable mixing formulas supplied. YOU CAN START EARNING BIG MONEY NOW. PAY AS YOU PROFIT! A limited number of machines available on easy payment terms. NOW is the time to start. Write today for free literature and full information.

GENERAL ENGINES CO., INC.
Dept. SR-45 —307 Hunter Street
Gloucester, N.J. • Gloucester 6-1337

STEEL PIER SENSATION
Luxurious RAINBOW ROCK fireplace wall in living room of the "Home of the Century" in Atlantic City, N. J.'s Steel Pier . . . acclaimed by over 500,000 Summer, 1953 visitors as the most beautiful they'd ever seen! Endorsed by the Pier's famous architect, William F. B. Koelle.

Makes beautiful, decorative fences, garden walls, garages, outside walls, room separators, etc.

MAKE MORE MONEY IN AVIATION

SAVE 2 YEARS GETTING STARTED

Northrop Institute trains you in Aeronautical Engineering or Aircraft and Engine Mechanics, quickly, thoroughly. Demand for Northrop graduates exceeds supply. Courses approved for Veterans. WRITE TODAY FOR FREE CATALOG. Give age and veteran status.

MAIL TO **NORTHROP AERONAUTICAL INSTITUTE**
1157 W Arbor Vitae Street, Inglewood 1, California

Bar Bells

BUY DIRECT FROM FACTORY
Write for free booklet and price list
$8.95 up
INDEPENDENT IRON WORKS
2416 East 23rd Street, Dept. "C"
Los Angeles 58, Calif.

Scrape paint quickly
ask your dealer for
Red Devil
Wood Scrapers

Red Devil Tools.
Get your FREE copy of "HOW TO MAINTAIN WOOD FLOORS."
MAIL COUPON TODAY
Red Devil Tools. Dept. 123
130 Colt Street, Irvington, N. J.

NAME _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____
2815

You build and keep this valuable Jewel Bearing MULTI-METER.

In Spare Time at Home—Prepare for a Better Job—or Your Own Business in

TELEVISION

RADIO • ELECTRONICS

You also build and keep this high quality 5 INCH oscilloscope—almost a "must" for Television servicing.

If the man who is seeking a better job or a business of his own will take time to compare all the opportunities available to him today, he will undoubtedly consider a career in Television-Radio-Electronics.

A bird's eye view of the tremendous opportunities that exist in this fast-growing American industry reveals that hundreds of TV stations are yet to be built, millions of sets to be manufactured, and other millions of existing sets to be serviced from time to time.

Another marked advantage for men 17 to 45 is the fact that they can prepare to enter these profitable fields in their spare time at home or in our modern laboratory in Chicago. Another distinct advantage is the fact that no previous technical experience or advanced education is required.

After a man completes his training at home or in our Chicago Laboratory, he may get the benefit of our effective EMPLOYMENT SERVICE to help him get started.

Again we say—compare these opportunities and advantages. Send for full facts today. Mail coupon below NOW!

21 INCH

Build and keep this BIG DTI Engineered TV set—easily converted to U.H.F. (DTI offers another home training, but without the TV set.)

COLOR TELEVISION

D.T.I.'s program also includes training in Color Television

EMPLOYMENT SERVICE

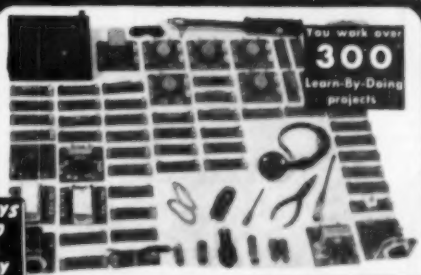
Upon completing either the Chicago Laboratory or Home Training, DTI's long-established, effective Employment Service is ready to help you start earning real money. Get full facts. Mail coupon today.

MODERN LABORATORY

If preferred, you can get all of your preparation in our modern Chicago Training Laboratory—one of the finest of its kind. Ample instructors, modern equipment. Write for details!

(If you are subject to MILITARY SERVICE you'll especially welcome the information we have for you.)

"One of America's Foremost Television Training Centers"



You work over **300** Learn-By-Doing projects

89 WAYS TO EARN MONEY IN TELEVISION RADIO-ELECTRONICS

ABOVE: You set up your own HOME LABORATORY . . . work with and keep the same type of basic electronic parts used in D.T.I.'s modern Chicago Training Center. Now you can get real Laboratory-type training—AT HOME.

16-mm. HOME MOVIES

You use this 16-mm. motion picture projector and many reels of educational film—a wonderful, exclusive, D.T.I. home aid to help you understand important fundamentals faster . . . easier . . . better. It's almost like having a teacher in your home.

ACT NOW!

Get information packed publication FREE!! Mail Coupon Today.

MEMBER OF NATIONAL HOME STUDY COUNCIL

DeVRY TECHNICAL INSTITUTE

4141 Belmont Ave., Chicago 41, Ill. Dept. PS-4-L

I would like the facts, including your valuable information-packed publication showing how I may get started toward a good job or my own business in Television-Radio-Electronics.

Name _____ Age _____

Street _____ Apt. _____

City _____ Zone _____ State _____

D.T.I.'s Training is available in Canada

DeVRY TECHNICAL INSTITUTE

AFFILIATED WITH

DeFOREST'S TRAINING, INC.

CHICAGO 41, ILLINOIS

Liquid WRENCH

loosens rusted bolts in seconds!

3-OZ. CAN 30c

POUR A FEW DROPS of Liquid Wrench on the rusted bolt, nut or screw, then . . .

TAP IT LIGHTLY with a hammer and let it set for a few moments . . .

THEN, TAKE IT OFF . . . easily, without breaking.

Liquid Wrench is absolutely safe for all metals, alloys.

clean it . . . then protect it with ACRA-SEAL

Acra-Seal waterproofs, dustproofs, smearproofs in one easy application. Forms a clear, transparent, pliable coat on any surface — metal, wood, paper or paint.

MOISTURE-PROOFS IGNITION SYSTEMS

2074

At Hardware Stores, Service Stations, Garages
Manufactured by
RADIATOR SPECIALTY CO.,
Charlotte, N. C.
In Canada: Radiator Specialty Co. Ltd. • Toronto

Here Is Proof MILLIONS Are Paying Too Much for VITAMINS!

Vitamins are costing Americans over three hundred million dollars a year. Much of this vast sum is spent needlessly. It's time folks taking vitamins should be told the plain facts. Stop taking vitamin products just on faith, prestige and with the mistaken belief that "high price" means "quality." You can learn the truth and be informed! No longer need you complain about the high cost of vitamins. Now you can get quick proof if you are getting your money's worth.

Without cost or obligation you may get the answers to all the vitamin questions. Do you know just what vitamins can do for you? Do you know the sole test of "quality" in vitamins is "correct unitage"? How effective is the new wonder vitamin B-12 and Folic Acid in building rich, red blood? Are the lipotropic factors Inositol, Choline and vitamin B-6 of value in arteriosclerosis (hardening of the arteries)? If your hair is turning gray, can vitamins be of help? If you are just fagged out about 4 o'clock every afternoon, what's this got to do with vitamins? Is there such a thing as an "anti-sterility" vitamin or what have vitamins got to do with sex? Can you be immune from avitaminosis by hoping to get your vitamins in cereals, bread, butter, meats and vegetables? Is it necessary to pay $19.50 monthly for food supplements rich in California-grown natural factors? These questions, which have perplexed thousands are answered in the most informative FREE book on vitamins ever written. It is simple, easy to understand and most important of all, it will tell you how you may save money. You should not miss this opportunity to get the facts about vitamins without cost or any obligation. No agents will call. Do not spend a single penny for vitamins until you get this book. Stop buying vitamins blindly. Send postcard today for FREE book and catalog of over 100 products to VITAMIN-QUOTA, Dept. T213, 880 Broadway, New York 3, N. Y., or Dept. T213, 1125 Crenshaw Blvd., Los Angeles 19, California.

A "GOOD HAND" HELPS YOU SUCCEED!

LEARN TO WRITE WELL

Your Name beautifully written, plus special pen-point for shaded writing. Only 10¢

OUR 53rd YEAR

Handwriting quickly improves with our easy-to-understand picture lessons! Put your spare time to good use; send today for ☐ FREE BOOKLET, "How to Become a Good Penman," or check volumes wanted below at $1 each: ☐ Business Writing ☐ Artistic Writing ☐ Card Writing ☐ Bird & Design Flourishing ☐ Engrossing Alphabets. COMPLETE SET $4.50. Ask for price list of penman's supplies.

TAMBLYN SCHOOL of PENMANSHIP
S. A. Zeller, Pres. 438 Ridge Bldg., Kansas City, Mo., USA

DR GRABOW PIPES

more jobs than graduates

ENGINEERS

Challenging opportunity! If you are interesting work in these fields, Pay you to write Box D, including a complete history of training and education.

Demand for our engineering graduates exceeds supply. *Effective placement!* Study in this world-famed college . . . established 1884. New term starts quarterly. *Approved for Korean Vets.*

Bach. Sc. degree in 27 months

Bachelor of Science in Mechanical, Civil, Electrical, Chemical, Aeronautical, Radio (Television), Administrative Engineering; Business Administration and Accounting. Also 36-weeks certificate course in Drafting. *Intensive program; technical fundamentals accented; comprehensive courses*

Small classes: personalized instruction. For earnest, mature students whose time and budget require accelerated courses and *modest costs*. Preparatory courses.

Beautiful campus in friendly college town. Well-equipped, new and modernized buildings and labs. Enter June, Sept., Jan., March. *Write Jean McCarthy, Director of Admissions, for Catalog and View Book.*

TRI-STATE COLLEGE

545 College Avenue — Angola, Indiana

Eliminates Guesswork—

"There is no other source so compiled on cars and trucks. MOTOR's Repair Manual takes the guesswork out of most every problem."

—S. V. Patterson, Rockford, Ill.

Helps Him Do Any Job.

"I have found the new MOTOR Manual a wonderful help. It has put me in a position to do every job."

—S. L. Sharpless, Los Angeles, Cal.

Paid for Itself On First 2 Jobs—

"MOTOR's Manual paid for itself on first 2 jobs, saved valuable time by eliminating guesswork."

—W. Schrop, Ohio

Amazed Self and Friends—

"I have amazed myself and my friends, too. Now do jobs that stumped me before."

—Michael Baliczky, Newark, N. J.

So Complete and Easy to Understand

— "So complete, easy to understand; have done jobs with Manual I would not have attempted without it."

—C. L. Vanerstrom, Mich.

Has Paid for Itself Time and Again—

"It sure doesn't take schooling to read it. As it's easy to see close-up pictures of every part. It has paid for itself time and time again."

—Paul R. Pemper, Tripoli, Wisconsin

Other Mechanic Worked Half A Day—He Does Job in Half An Hour

— "I fixed motor in 30 minutes after another mechanic had worked on it half a day."

—C. Auberry, Murfreesboro, Tenn.

Thousands Now Do Car Repairs

THEY NEVER KNEW THEY COULD HANDLE!

USED BY U. S. ARMED FORCES

Whether You're a BEGINNER or an EXPERT MECHANIC, MOTOR'S Brand-New AUTO REPAIR MANUAL Will Show You HOW TO FIX ANY PART OF ANY CAR

QUICKER...EASIER...and RIGHT the First Try!

COVERS EVERY CAR FROM 1940 THRU 1955

FREE 7-DAY TRIAL!

Return and Pay Nothing If Not Satisfied

THE men whose pictures you see on this page are just a few of the thousands who rave about MOTOR's Auto Repair Manual. And now you, too, can be a "crackerjack" at fixing cars! Because this famous Manual shows you exactly how to fix ANY part of ANY car. All you have to do is follow the clear step-by-step instructions and pictures.

No guesswork! MOTOR's Manual takes nothing for granted. Tells you where to start. What tools to use. Then it leads you easily and quickly through the entire operation!

Over 2,900 Pictures! So Complete, So Simple, You CAN'T Go Wrong!

NEW REVISED Edition covers everything you need to know to repair 737 chassis models. Over 1000 giant pages, 2,900 "This-Is-How" pictures. 291 "Quick-Check" charts—more than 23,436 essential repair specifications. Over 225,000 service and repair facts. Instructions and pictures are so clear you can't go wrong!

Even a green beginner mechanic can do a good job with this giant guide before him. You'll find yourself tackling jobs now that you wouldn't even touch before! And if you're a top-notch mechanic, you'll be amazed by the time and labor-saving factory methods!

The "Meat" of Over 160 Official Shop Manuals

The editors have put together the "know-how" from over 160 Official Shop Manuals and hundreds of service bulletins, "boiled it down" into one fully-illustrated easy-to-understand guide.

Here's ILLUSTRATED step-by-step guidance you need to service and repair all types of Engines, New Torque Converters, All Automatic Transmissions, Chokes, Fuel Pumps, Ignition Systems, Generators, Carburetors, Universals, Axles, Brakes, Power Steering, Shock Absorbers, Air Conditioning, AND MUCH MORE!

SEND NO MONEY

Try Book for a Week FREE

Send no money. Pay nothing to postman. Test book in your own garage or shop. It's *GUARANTEED* to pay for itself in 7 days. If it doesn't, just return the book, and owe nothing. Rush coupon for your FREE-Trial copy. *MOTOR Book Dept., Desk 24X, 250 West 55th St., New York 19, N. Y.*

Same FREE Offer on MOTOR'S Truck and Tractor Manual

Covers EVERY job on EVERY popular make gasoline truck, tractor made from 1946 thru 1954. FREE 7-Day Trial. Check proper box in coupon.

Covers 737 models—all these makes

Buick, Cadillac, Chevrolet, Chrysler, Crosley, De Soto, Dodge, Ford, Frazer, Henry J, Hudson, Kaiser, Lincoln, Mercury, Nash, Oldsmobile, Packard, Plymouth, Pontiac, Studebaker, Willys

MAIL COUPON NOW FOR 7-DAY FREE TRIAL

MOTOR BOOK DEPT.
Desk 24X, 250 W. 55th St., New York 19, N. Y.

☐ **MOTOR'S New AUTO REPAIR MANUAL.** If O.K., I will remit $2 in 7 days, $2 monthly for 2 months and a final payment of 95c (plus 35c delivery charges) one month after that. Otherwise I will return the book postpaid in 7 days. *(Foreign price, remit $9 cash with order.)*

☐ **MOTOR'S New TRUCK & TRACTOR REPAIR MANUAL.** If O.K., I will remit $2 in 7 days and $2 monthly for 3 months, plus 35c delivery charges with final payment. Otherwise I will return book postpaid in 7 days. *(Foreign price, remit $10 cash with order.)*

Print Name..... Age.....

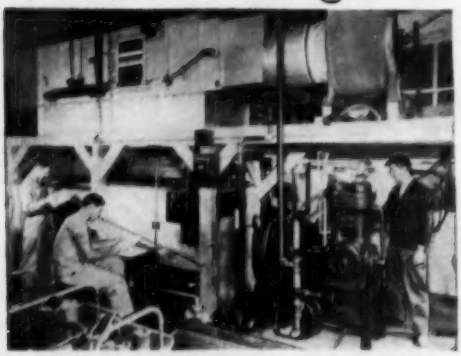
Address.....

City..... State.....

☐ **Check box and save 35c** shipping charge by enclosing WITH coupon entire payment of $6.95 for Auto Repair Manual (or $8 for Truck and Tractor Repair Manual.) Same 7-day return-refund privilege applies.

BECOME A

Mechanical Engineer



B. S. Degree in 36 months

Mechanical Engineers hold respected, well-paying, and highly interesting jobs in many fields of industry. You can prepare now . . . for a secure future and a well-paid career as an engineer or engineering technician at the Milwaukee School of Engineering.

Choose from these courses at the Milwaukee School of Engineering

ENGINEERING 36 months, Bachelor of Science Degree
- Mechanical Engineering with a major in Design, Metal Fabrication or Plant Engineering.
- Electrical Engineering with a major in Electronics or Power.

SERVICE 6 to 12 months
- Electricity
- Heating
- Refrigeration
- Welding

TECHNICIAN 12 to 18 months
- Radio and Television
- Electronics
- Electrical Power
- Mechanical Technician
- Air Conditioning
- Welding

General preparatory course — 3 months.

TERMS OPEN JULY, SEPTEMBER, JANUARY, APRIL

Faculty of specialists. Over 50,000 former students. Annual enrollment from 48 states and 23 overseas countries. *Non-profit. 52nd year.* Military, Practical or Academic training evaluated for advanced credit. Approved for Veterans Training. Write for details today.

MILWAUKEE
SCHOOL OF ENGINEERING

MS-9A

MILWAUKEE SCHOOL OF ENGINEERING
Dept. PS-455, 1025 N. Milwaukee
Milwaukee 1, Wisconsin

Send free illustrated career booklets ☐ Radio-TV
☐ Mechanical Technology ☐ Electrical Technology

I am interested in _____
(name of course)

Name _____ Age _____

Address _____

City _____ Zone _____ State _____

If veteran, indicate date of discharge _____

STRONG, ECONOMICAL TRAILER COUPLER

Tough, durable drop-forged steel socket keeps your trailer in tow no matter what! Model 1-B, illustrated, hauls 2500 lbs., costs only $4.66 (Fed. tax incl.). Other models to 10,000 lbs. capacity. Write for the dope on our complete line of trailer axles, couplers and parking jacks!

HAMMER BLOW TOOL CO.
WAUSAU 14-D, WISCONSIN

Personal RADIO

IT'S AMAZING! New tiny radio that gives clear reception of local radio stations. NO TUBES and NO BATTERIES TO BUY! NO ELECTRIC "PLUG-INS"! Uses new diode that eliminates them all FOREVER! A self-contained radio in sturdy case with built-in speaker phone. Not a toy, but a practical tiny radio for personal enjoyment. Imagine . . . music, news, sports . . . right in the palm of your hand. **SEND ONLY $4.95** for this COMPLETE READY-TO-LISTEN RADIO. Order NOW. No C.O.D.'s.

NATIONAL, Dept. R-12, Box 5, Sta. E, Toledo 9, Ohio

IT'S AS EASY AS . . .

LIGHTING A CIGARETTE

TO MAKE OVER **$50** *A DAY WITH*

CIG-O-MAT

The AMAZING Automatic Dashboard Cigarette Lighter

10-SECOND DEMONSTRATION MAKES THE SALE

Insert—Push Button—Cigarette Is Lit

Rich enamel finish. Precision made. Guaranteed for two years. Fits lighter socket on all cars. No installation necessary. Cig-O-Mat means safer driving. Motorists can now keep eyes on road while lighting a cigarette. **SALESMEN:** Sell individually boxed Cig-O-Mats direct to car owners. **DISTRIBUTORS:** Sell Cig-O-Mats on display cards to filling stations, garages, hardware stores, taverns and many other retail stores.

FREE Display Counter Card with 9 CIG-O-MATS

Retail Price **$1.69** *each*

BIG PROFITS—FULL OR SPARE TIME

TRIANGLE PRODUCTS, INC., Dept. PS-4
1226 Fourth Ave., Milwaukee, Wis.
PLEASE RUSH:
☐ **12 Cig-O-Mats individually boxed for $10.00**
☐ **9 Cig-O-Mats on Display Easel for $7.38**
☐ **1 Sample and Details for $1.00**

I enclose $ _____
NAME _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

BARGAINS

IS THE ONLY BIG TABLOID PUBLICATION in Existence That Tells You WHERE & HOW —EVERY MONTH—

- **To Buy Bankrupt, Closeout, Surplus Bargains!**
- **To Buy Items at Wholesale! • At Below Wholesale!**
- **To Buy Many New & Unusual Items!**
- **To Obtain Information on Rare Money Making Offers!**

TOYS, BOOKS, JEWELRY, GREETING CARDS, COSMETICS, HOUSEHOLD MERCHANDISE, APPLIANCES, INDUSTRIAL MATERIALS, MACHINERY, TOOLS, ETC.

Often as Low as 10c-25c on the Retail Dollar!!

ONE Issue of this Sensational NEW publication can save you MORE MONEY than the cost of the entire subscription! You can BUY BETTER, CHEAPER, NEWER THINGS EVERY MONTH OF THE YEAR! Today, when your dollar buys so little, you absolutely need every single issue of BARGAINS in order to get the MOST FROM EVERY PENNY YOU SPEND. Each issue carries HUNDREDS of bargain offers . . . many times SO EXTRAORDINARY that it's hard to believe that they're GENUINE! Buying at WHOLESALE, BANKRUPT, SURPLUS, CLOSEOUT PRICES can save you from 10c to 80c or more on every dollar you spend! THIS MAY BE HARD TO BELIEVE, BUT IT IS THE TRUTH!

YOU Can make FANTASTIC PROFITS Buying Up Bargain Merchandise CHEAP and Selling It CHEAP

Thousands of Agents, Salesmen, Dealers are subscribers to "BARGAINS". They want to know where to buy BEST in order to sell at low prices for BIG PROFITS. NO REASON why you CAN'T DO THE SAME! Special articles in BARGAINS give you valuable tips on HOW to sell these bargains for BIG PROFITS. And you know, EVERYBODY is looking for bargains these days . . . in fact, this is the only kind of merchandise that is being sold in tremendous volume. Ask any big businessman!

Unique "Subscribers Shopping Service" Enables You to Buy Big Name Merchandise at TREMENDOUS SAVINGS

You won't find this feature in ANY OTHER MAGAZINE. ONLY "BARGAINS" has it. For subscribers ONLY, each month it negotiates bargain offers in famous merchandise at LOW WHOLESALE PRICES and then offers them to subscribers AT NO PROFIT! Enables you to buy in small lots—singly or in quantity at the same prices (sometimes even lower) than dealers are paying! This SINGLE FEATURE OF BARGAINS IS WORTH THE LOW SUBSCRIPTION PRICE A DOZEN TIMES OVER. Yet, it's only ONE feature among many to be found! Yes. Just one!

"Bargains" Is the ONLY Publication of Its Kind in Existence!

Search your newsstand high and low. You won't find another publication like it! BARGAINS is available by subscription ONLY. Read the glowing letters by subscribers who received their first copies and WERE AMAZED by this sensational publication! You will be, too!

SAVE Up to $1,000—EARN Up to $3,000

We honestly believe that it's possible to SAVE up to $1,000—and EARN up to $3,000 within a year by reading "BARGAINS" EVERY MONTH! WHY NOT PROVE THIS FOR YOURSELF!

Your subscription will automatically include the BIG 1955 CHRISTMAS SPECIAL ISSUE . . . jam full of terrific, eye opening holiday BARGAINS! JUST $2.00—17c per month gives you 12 great money saving issues of BARGAINS!

$2.00 Per Year—12 Big Issues

(Regular price, $3.00 per Year)

Special Limited Time Offer to Get 10,000 New Subscribers!

Your Money Back IN FULL if the First Issue Doesn't Please You!

LET'S FACE IT . . . Claims, promises are easily made on paper. You may or may not believe all we say here, BUT can you go wrong in subscribing to "Bargains" on this iron-clad MONEY BACK GUARANTEE . . . Your money back IN FULL if the first issue that you receive doesn't please you! Can any offer be more POSITIVE, more FAIR than this POWERFUL guarantee?

Tower Press, Inc., P. O. Box 591-DK, Lynn, Mass.

DON'T Take Our Word For It—Here's What Subscribers Say About "BARGAINS"!

". . . Received my 1st issue and may I say IT IS A GREAT MAGAZINE."—M. C., Ark.

". . . I am very pleased with BARGAINS. I have never seen anything like it."—Mrs. D. M., Maine.

". . . Just received my 1st copy of "Bargains" and believe me, it is all that you claimed it to be."—T. A., N. Y.

". . . I was the recipient of my 1st copy a few days ago. I am completely satisfied with the periodical. I also wish to express my appreciation to you for having made the magazine available to me. I shall be pleased to continue my subscription as long as the magazine is available."—W. S., Wash.

Every One OF THESE LETTERS ARE IN OUR FILES & WERE NOT SOLICITED IN ANY WAY OR MANNER:

Here's a FEW Samples of the Bargains Usually Found in "BARGAINS"!

- PENCILS, 57½¢ per Gross!
- 25¢ Rudolph the Reindeer Brooches, 2¢ each!
- Plastic Toy GUNS, 2¢ each!
- $1. Mufflers, Scarfs, 12½¢ each!
- Double edge razor blades, $1.50 per 1000!
- LADIES APRONS, 6¼¢ each!
- $2.50 WALLETS, 30¢ each!
- $1. val. BILLFOLDS, 15¢ each!
- $1. Kiddies handbags, 3¢ each!
- CIGARETTE HOLDERS, 1¢ each!
- BUTTONS, 144 for 25¢!
- NEW Phono records, 78 & 45 r.p.m., 7¢ each!
- 69¢ Insect Repellent, 5¢ each!
- New 20" T.V. Pic. tubes, $21.95 each!
- Famous brand $18.75 perfume, $1. each!
- 49¢ Xmas window decorations, 10¢ per set!
- $1-$3 Hard cover books, 20¢ each!
- $200.00 Surplus typewriters, $23.00 each!
- 50¢ Everyday greeting cards, 7¢ per box!
- $1.95 Men's Silk Ties, 12½¢ each!
- $1. val. personal cloth name tapes, 40¢ for 72!
- 39¢ Under arm deodorant, 2¢ jar!
- $1. Automatic card shufflers, 9¢ each!
- NEW HAIRNETS, ½¢ each!
- $15.00 Electric Percolators, $3.00 each!
- $1.75 Rudolph Reindeer kiddies toiletry sets, 35¢ each!
- $5.50 Lucite Hairbrushes, 65¢ each!
- New Bobby Pins, 70¢ per 700 pins!
- $10. Men's Toiletry Sets, 60¢ each!
- Calendar Wrist Watches, $5. each!
- Christmas Seals, 25¢ per 1000!
- $2.98 Horserace game records, 30¢ each!

• PLUS HUNDREDS OF OTHER SENSATIONAL BUYS!

(Above list merely illustrates type of bargains usually found in this paper. Lists naturally change from month to month.)

—"Tear out Coupon. Mail NOW—at once!"—

Tower Press, Inc., Box 591-DK, Lynn, Mass.

O.K. Here's my $2.00 for 1 year subscription. Rush me 1st copy!

Name.....

Address.....

City..... State.....

Remember! Your Money Back IN FULL if the 1st issue you receive doesn't please you!

INVENTORS

WE recommend that you take the following preliminary steps toward patent protection. Make a disclosure of your invention; sign, date and have your disclosure witnessed by two people who understand your invention; authorize us to conduct a preliminary search among previously granted U. S. patents for similar types of invention. We give you a report on the probable patentability of your invention and our recommendation for further course of action.

Let us send you a copy of our instructive booklet, "Patent Protection for Inventors" and our convenient "Evidence of Invention" disclosure form. No obligation.

VICTOR J. **EVANS & Co.** *Merlin M. Evans*
REGISTERED PATENT ATTORNEY
140-D MERLIN BUILDING, WASHINGTON 6, D. C.

INVENTORS

I shall be pleased to furnish you, upon request, with information relative to patent procedure—without any obligation on your part.

PATRICK D. BEAVERS
Registered Patent Attorney
937 Columbian Building, Washington 1, D. C.

INVENTORS

PROTECT YOUR INVENTION BY A U. S. PATENT. SEND FOR FREE "INVENTION RECORD" FORM AND "PATENT INFORMATION EVERY INVENTOR SHOULD HAVE".

CARL MILLER
REGISTERED PATENT ATTORNEY
WOOLWORTH BLDG., 35th FLOOR, 45C
NEW YORK CITY

LAW FREE BOOK

THE LAW TRAINED MAN

Write today for a FREE copy of illustrated law book, "THE LAW-TRAINED MAN," which shows how to earn the professional Bachelor of Laws (LL.B.) degree through home study of the famous Blackstone Law Course. All necessary books and lessons provided. Moderate cost; convenient monthly terms. Write for FREE law training book today.

Blackstone School of Law, 225 N. Michigan Ave.
Founded 1890 **Dept. 124, Chicago 1, Ill.**

PATENTS

C. A. SNOW & CO.
REGISTERED PATENT ATTORNEYS
WRITE FOR INFORMATION TO
426 SNOW BUILDING, WASHINGTON 1, D. C.

"Building Beautifiers" Can Earn High Incomes

Colorcrete, a cementitious plastic, gives lifetime beauty and protection to drab, dirty masonry — concrete, stucco, etc. — on all kinds of buildings. Tough, tenacious, enduring. Easily cleaned. Helps to daylight dark interiors. Choice of gleaming white or 30 colors. Applied under pneumatic pressure to form an inseparable bond.

More Colorcretors are needed to supply the ever-increasing demand. Low investment appeals to men of limited capital. Work is easy, fascinating, highly profitable. Broad opportunity to develop a lifetime business. No special ability or experience needed because we supply full instructions and sales cooperation. Colorcrete machine is simple to operate, easy to move around. Write today for Opportunity Book.

Colorcrete Industries, Inc. COLORCRETE CB
572 Ottawa Av., Holland, Mich.
IN CANADA: DUNN MASONRY MACHINERY LIMITED
1022 Dundas Highway Cooksville, Ont.

INVENTORS

Send for
PATENT INFORMATION
Book and
INVENTOR'S RECORD
without obligation
GUSTAVE MILLER
48-PS WARNER BUILDING
WASHINGTON 4, D.C.

REGISTERED PATENT ATTORNEY
ASSOCIATE EXAMINER
U.S. PAT. OFF. 1922-1929
Patent Attorney & Advisor
U. S. NAVY DEPT. 1930-1947
PATENT LAWYER

INVENTORS

Whether an invention is patentable can be substantially determined by a search of the U. S. Patent records. Without obligation, write for information explaining the steps you should take to secure a patent.

JOHN N. RANDOLPH
Registered Patent Attorney
205 Columbian Building Washington 1, D. C.

INVENTIONS For Sale

Our clients have excellent inventions in many fields to be manufactured and marketed on a cash, royalty or license basis. Full description of clients' inventions will be sent if you state your field of interest. INVENTORS: We also want inventions of every type. Write for details.

GLOBAL MARKETING SERVICE
1404 Mitchell Street Dept. PS Oakland 1, Calif.

End Filter Replacement FOREVER!

TRY THIS TEST

This simple "*bronze that breathes*" smoke test demonstrates the amazing porosity of a MICRO BRONZE oil filter. Metallurgists call bronze "the timeless metal." Thanks to war-time and post-war scientific development, MICRO BRONZE engineers now use sintered bronze to prevent undue engine wear and eliminate frequent oil changes.

with Revolutionary New Type *Micro* BRONZE Permanent All-Metal Oil Filter

ORIGINALLY DEVELOPED FOR THE U.S. GOVERNMENT for use in supersonic aircraft and guided missiles, MICRO BRONZE-type filters are the only filters made that provide *full* lubrication protection for modern automobiles!

ONLY FILTER THAT DESTROYS ENGINE ACIDS

GUARANTEED FOR 99 YEARS

FILTERS THE DIRT BUT NOT THE DETERGENTS

U.S. Patent App. No. 464400

Only Filter in the World with Built-in Acid Neutralizer!

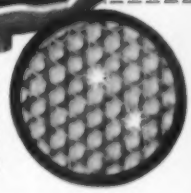
Special Acid Neutralizer Element in the Micro Bronze Filter

THE SECRET IS THE "BRONZE THAT BREATHES"

Here at last is an oil filter that never needs replacing . . . increases your engine power . . . ends frequent oil changes . . . adds thousands of miles to engine life . . . stops waste of valuable oil additives . . . and saves you worthwhile money in the bargain! Tests give conclusive proof that Micro Bronze type filters are the finest, most economical oil filtering units ever made.

MAGNIFIED PORTION

of MICRO BRONZE filter showing microscopic metal balls fused together to make a solid, but porous, filter. MICRO BRONZE metal can't absorb additives, can't "channel," can't "blow," yet screens out finest particles of grit and metal which drop to bottom of filter housing as "sludge."



"FILTERS THE DIRT—BUT NOT THE DETERGENT!"

Major oil companies have developed heavy duty oils containing expensive additives and detergents that greatly reduce engine wear. Old-fashioned cloth, paper or earthen filters —standard equipment on many cars!—soak up these beneficial elements, but by-pass damaging abrasives and metal particles into the engine. The MICRO BRONZE exclusive double-cone design *filters out* abrasives and metal particles as microscopic as 39/millionths of an inch (one micron). Oil additives are *left in* to provide a protective film between moving parts. New MICRO BRONZE Oil Filters, combined with modern HD oils, *double your engine's life!*

Burned gasoline creates a strong sulphuric acid solution that eats into vital engine parts, causing them to wear out years before their time. MICRO BRONZE *is the only filter in the world with a built-in acid neutralizer* which adds years to engine life and eliminates the main reason for frequent oil changing.

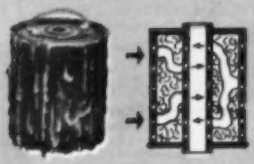
FITS EVERY CAR AND TRUCK

A MICRO BRONZE Unit that fits any standard filter housing including all full-flow models costs only $6.95. Easy to install, never needs changing. MICRO BRONZE Filter Housing, $9.95.

You'll save the total cost of your MICRO BRONZE Oil Filter in a few weeks. You save in replacement pack costs and "the quart for the pot" you need every time you change filter packs. *Most important, you save costly oil changes—with average driving, one oil change per year is sufficient.*

SOLD UNDER MONEY-BACK GUARANTEE TO LAST FOREVER!

THROW AWAY YOUR OLD FILTER



At left is shown an old-style filter "pack"—the kind that's probably in your car now. How can a dirty pack keep oil clean? It can't—actually contaminates your oil! Illustration at right shows how ordinary packs "channel" as a result of oil pressure, allowing dirt to tunnel through the pack and into the oil.

THIS MAY BE WORTH $10,000 OR MORE TO YOU!

If you would like to be one of the people we are appointing as a MICRO BRONZE Distributor or Dealer, write, wire or phone us today. Exclusive territories with profit potentials of thousands of dollars are now being awarded. Address: Sales Division, MICRO BRONZE Filter Corp., 11766 W. Pico Blvd., Los Angeles 64, California

USE COUPON NOW

Micro BRONZE FILTER CORP.

11766 W. Pico Blvd., Los Angeles 64, Calif. • Cable Address: Micronize

MICRO BRONZE Filter Corporation, Dept. PS-45
11766 W. Pico Blvd., Los Angeles 64, Calif.

Ship me immediately . . . . . MICRO BRONZE Oil Filters with lifetime guarantee as follows. I understand you will promptly refund my money if I'm not pleased.

☐ Conversion unit @ $6.95. Factory pays shipping.

☐ MICRO BRONZE Housing Unit (needed where car does not now have filter), $9.95 (does not include filter element). Factory pays shipping.

NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

MAKE, MODEL & YEAR OF CAR _____

SALE

INSIST ON UNITED

"Seal of Quality." ALL UNITED glasses are Achromatic. Color corrected for Sharper, Clearer, Crisper images. We have faithfully served over 600,000 customers!

6x30 4x6 in. 15 oz. 390 ft. field. All Purpose. **Reg. $34.50** **$24.95**

7x35 4¾x7⅝ in. 26 oz. Center focus. Streamlined! 525 ft. field. (WIDE ANGLE - POPULAR!) **Reg. $64.50** **$59.95**

7x35 5x6 in. 20 oz. 375 ft. field. Very Popular. **Reg. $45.50** **$34.50**

7x35 5½x6 in. 20 oz. 375 ft. field. CENTER focus. **Reg. $49.50** **$38.50**

7x50 7x7 in. 32 oz. 375 ft. field. Day & Nite glass. **Reg. $49.50** **$29.95**

7x50 7¼x7 in. 34 oz. 375 ft. field. CENTER focus. **Reg. $54.50** **$34.95**

SALE!

30 DAY TRIAL

UNITED'S offer for 19 years has been "BUY-TRY" for 30 days. If not satisfied for any reason return for **full refund!**

8x30 4x5 in. 18 oz. 390 ft. field. Concentrated power. **Reg. $39.50** **$26.95**

8x40 5½x6¾ in. 27 oz. 320 ft. field. Streamlined! **Reg. $54.50** **$38.95**

10x50 5½x6½ in. 27 oz. 300 ft. field. CENTER focus. **Reg. $59.50** **$39.95**

12x50 5½x7 in. 27 oz. 260 ft. field. CENTER focus. **Reg. $67.50** **$47.50**

15x65 6¼x9 in. 51 oz. CENTER focus. **Just Received** **$59.50**

16x50 5½x7¼ in. 27 oz. Favorite! CENTER focus. **Reg. $74.50** **$54.50**

20 Power Falcon — 18 ounces! Exclusive with **UNITED** **$39.95**

USED 16 x 50

Regularly sold at $69.50

NOW $37.60

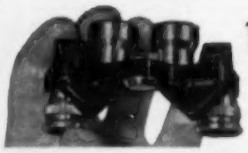
These are not "used" in the sense that someone else owned them, but their frames have been scratched or some of the paint rubbed off while being taken off of the shelves or when handled on our viewing range. Their cases, too, sometimes show scuff marks. OPTICALLY AND MECHANICALLY THEY ARE A-1. 7" high. Water-dust resistant. 2" wide objectives assure greater illumination and brighter sharper images. Weigh only 27 ounces!

D.W.B. Washington writes: *"The 16x50 are very good. I can read the small names of ships (5 inches high) at 800 to 1000 yards out!"*

7x - $14.95

REG. $19.95

Smaller than a pack of cigarettes! Weighs only 5½ ozs.! Threaded fittings thru-out! Achromatic, Prismatic, Color Corrected!



10x - $19.95

REG. $24.95

Weighs 6½ ozs.! 3" x 3¼". Tremendous power. The "Titan Midget"!

USERS WRITE: *"I wouldn't have risked the money if it hadn't been for your guarantee. Frankly I was amazed: in clarity, color correction, alignment and every other respect they are perfect." W.M.H., Culver, Ind.*

LEATHER CASE, STRAPS INCLUDED

With all binoculars at prices given! Made in Japan. Cash orders shipped postpaid. C.O.D.'s require $2.00 deposit. Add Federal tax. **UNITED BINOCULAR CO., 9043 S. Western Ave., Dept. ARF-1516, Chicago 20, Ill.**

Dealers Write for Wholesale Catalog.

STICK WITH LEPAGE'S GLUE

Guaranteed by Good Housekeeping

GLOUCESTER, MASS.

319 Different STAMPS—25¢

includes Set of 3 MONACO NUDES

plus exciting set of South Pole Stamps

You also get **CROATIA GIANT TRIANGLES** — 6 huge stamps showing exotic flowers and birds in full color; **UNION OF SO. AFRICA** — Queen Elizabeth coronation issue; **SAN MARINO** — set of 3 multi-colored airmail triangles; **LUNDY** — fascinating Puffin bird; **STALIN DEATH STAMP** — plus hundreds more unusual stamps and sets from all over the world! Imported collection of 319 all-different stamps — guaranteed $6.73 catalog value — all yours for only 25¢, to introduce our Bargain Approvals. Included, **FREE — "Midget Encyclopedia of Stamps"** — plus stamp Identifier and Dictionary.

SEND 25¢ TODAY **ASK FOR LOT EH22**

ZENITH CO., 81 Willoughby St., Brooklyn 1, NY

DRAW The First Day!

NO LESSONS! NO TALENT!

New Amazing Invention—"Magic Art Reproducer." You can draw Your Family, Friends, Anything From REAL LIFE—Like An Artist Even If You CAN'T DRAW A Straight Line! Anything you want to draw is automatically seen on any sheet of paper thru the "Magic Art Reproducer." Then easily follow the lines of the "picture image" with a pencil for an original "professional looking" drawing. Also reduces or enlarges. SEND NO MONEY! Free 10 Day Trial! Pay Postman on delivery $1.98 plus postage. Or send only $1.98 with order and we pay postage. Money Back Guarantee.

NORTON PRODUCTS, Dept. 4404W, 296 Broadway, N.Y.C.

Something NEW under the SON!

TILL WITHOUT TOIL WITH BOLENS M-E MUSTANG ROTARY TILLER

Do 5 gardening jobs in 1 operation: PLOW • DISC HARROW • AERATE • CULTIVATE. Tines Guaranteed against Breakage.

Bolens offers a complete line of Rotary Tillers in 3 hp, 4½ hp and 6 hp. AVAILABLE WITH WORK SAVING PLUG-IN ATTACHMENTS.

MAIL COUPON TODAY!

BOLENS PRODUCTS DIVISION
Food Machinery and Chemical Corporation
267-4 South Park Street, Port Washington, Wisconsin

I am interested in:

☐ TILLERS ☐ MOWERS
☐ TRACTORS ☐ CHAIN SAWS

Name _____

Address _____

City _____ Zone ____ State _____

Get more money! More security! More out of life!

Learn TELEVISION · RADIO · ELECTRONICS

Get the best!

Get National Schools' SHOP-METHOD HOME TRAINING!

Start now! Why wait around for that raise or promotion that may never come? Get started *now* in high-paying TV-Radio-Electronics! National Schools' SHOP METHOD Home Training prepares you for success in a top-salary job or in your own business. You learn *all three*... Television, Radio, Electronics...in one complete course. Our Shop-Tested lessons and manuals help you master all phases in shortest possible time! Send coupon, find out today!

WHY NATIONAL SCHOOLS LEADS THE FIELD

Located in the "Television Center" of the world, our staff is in close touch with latest developments and opportunities. We give you personalized job placement assistance. We also give you confidential help with both technical and personal problems relating to your training. We show you how to make Part Time Earnings as you progress. Whether you live 30 miles away, or 3,000, you will always be pleased with our prompt, friendly service!

DRAFT AGE? Our home training helps you achieve specialized ratings and higher pay grades if you go in service.

We send you this precision-tested Multitester! Plus parts to build Oscillators, Receivers, Signal Generator, Continuity Checker, Combination Short Wave and Standard

Broadcast Superhet Receiver. All this equipment is part of your National Schools course. NO EXTRA CHARGES! Send coupon for free books!

NATIONAL SCHOOLS, world-famous technical trade school. Now entering our 50th year!

NATIONAL SCHOOLS

TECHNICAL TRADE TRAINING SINCE 1905

LOS ANGELES 37, CALIFORNIA

In Canada: 811 W. Hastings St., Vancouver, B.C.

- APPROVED FOR G. I. TRAINING
- BOTH HOME STUDY AND RESIDENT COURSES OFFERED

30 MILLION TV SETS need regular repair! Color TV means more sets than ever before. NOW is the golden opportunity to cash in on this multi-billion-dollar industry. Or "write your own ticket" in broadcasting, manufacturing, and other specialized phases!

YOUR AGE IS NO OBSTACLE!

Send for FREE LESSON!

FREE BOOK & SAMPLE LESSON will convince you! SEND COUPON TODAY!

MAIL NOW TO OFFICE NEAREST YOU!

(mail in envelope or paste on postal card)

NATIONAL SCHOOLS, DEPT. RC-45

4000 SOUTH FIGUEROA STREET
LOS ANGELES 37, CALIFORNIA

OR

323 WEST POLK STREET
CHICAGO 7, ILLINOIS

Please rush FREE BOOK, "My Future in Radio-Television-Electronics," and FREE LESSON at once. I understand there is no obligation, and no salesman will call.

NAME _____ BIRTHDAY _____ 19__

ADDRESS _____

CITY _____ ZONE _____ STATE _____

☐ Check if interested ONLY in Resident Training at Los Angeles.

VETERANS: Give date of discharge _____

DRAFTSMEN

CASH BIG PAY CHECKS!

Train Now for more success, greater security

LEARN AT HOME IN SPARE TIME
(or at college in Chicago)

Check the want ads in any newspaper—SEE the big-pay opportunities open to you as a draftsman. What's more, you can learn this well-paid prestige profession at home—quickly, easily! No special talent needed. Get complete, step-by-step Chicago Tech lessons in the mail, spend a few pleasant hours studying each week. In a short time you'll be a well-trained draftsman, ready to take your pick of many good jobs. Act now!

FREE INFORMATION—MAIL COUPON TODAY!
Get FREE TRIAL LESSON plus information about C.T.C. practical training. Learn what successful Chicago Tech graduates say about high pay and opportunities in drafting. No charge, or obligation.

CHICAGO TECHNICAL COLLEGE

D-223 Tech Bldg., 2000 So. Michigan Ave.
Chicago 16, Illinois
Mail me FREE Lesson with information about big opportunities in DRAFTING.

Name.....Age.....

Address.....

City.....Zone....State.....

NEW WAY TO MAKE MONEY!

75c PROFIT on each dollar! Luxurious stainless steel tableware, guaranteed 50 years. Can't rust, tarnish or stain. Looks like sterling silver. 30, 50 and 75 piece sets and open stock. Offer women set free for every two sets they sell to friends. Have agents, others sell for you. Write orders on commission or go in business for yourself. Use our catalogue with ONLY your name. Many other money-making plans. We can also ship under your label.

FREE OUTFIT AND MONEY-MAKING PLANS!
No obligation. Send postcard with your name and address for free catalogue, all money-making plans and everything you need to start making money spare or full time.
TOPVAL CORP. • LINDENHURST 37, NEW YORK

SHORTHAND in 6 WEEKS

Famous SPEEDWRITING shorthand. 120 words per minute. No symbols; no machines; uses ABC's. Easiest to learn, write and transcribe. Lowest cost. 250,000 taught by mail. For business and Civil Service. Typing available. 32nd year. Write for FREE booklet to: **SCHOOL OF**

Speedwriting®
Dept. 2604-5, 55 W. 42 St., New York 36

WE GUARANTEE to match any original finish on any model from 1940 on!

Now you can remove unsightly stone bruises, door nicks, scratches and other finish blemishes . . . or paint fender skirts, sun visors, etc., without paying for an expensive commercial job!
YOU JUST PUSH A BUTTON and MATCH-IT'S fine mist nozzle applies a high gloss lacquer that dries in a few minutes to a gleaming luster without rubbing.
CUSTOM MATCHED to your car's finish. The makers of MATCH-IT use the same paint formulas as were applied by the manufacturer in the original finish on your car. *We guarantee a perfect match to within one percent of original factory color—Not repeats!* (Note: where primer is needed, order MATCH-IT automotive primer, 12 oz. can $3.00.)
PREVENT destructive rust and corrosion—keep your car gleaming new! Just write the *make, year* and *exact* manufacturer's original color of your car, on a piece of paper, and enclose it with a check or M.O. for $3.95 addressed to:

MILWAUKEE paint products co., inc.
Dept. S-2, 2500 W. North Ave., Milwaukee 5, Wis.

OWN YOUR OWN BUSINESS

Free folder tells how! Build and operate this profitable roadside stand—seasonal or year 'round. Mail coupon now.

RICHardson ROOT BEER Rich in flavor

RICHardson Corporation
Dept. PS-4, P.O. Box 790, Rochester 3, N.Y.
Please send me FREE folder on your tested, franchised refreshment stand.

Name.....

Address.....

Place.....

DYNAMOMETER CONFIRMS 5 YEAR RESEARCH BREAKTHROUGH!

17 PT. SELF-CLEANING PLUG SHOWS 8 HORSEPOWER GAIN!

IN A TEST that echoed through the farthest corners of the automotive world, this LIFE-TIME Spark Plug still fired clean, hot and steady at **50,000 CAR-MILES!**

NOW... ORDER REGISTERED SET FOR YOUR CAR AT POPULAR PRICE

ELECTRODE RESEARCH, it can now be **definitely stated,** has probed far into one of the last remaining frontiers of knowledge about the internal combustion engine. Before LIFE-TIME development **the spark plug was the most often replaced part of your car.** In building the LIFE-TIME Spark Plug's radically advanced electrode design, our engineers knew, from periodic tests that we were on the track of something that would greatly increase plug life. We also **suspected** that electrode design could actually increase the horsepower of an engine.

HOW PLUGS CAN CAUSE POWER LOSS. Most engineers agree "creeping paralysis," gradual electrode disintegration, carbon build-up, gradually widening gap, all cause premature firing, misfiring and power loss — enough in many cases to **waste one gallon in every ten you buy.** But there were and are some fine engineering minds who feel that certain conditions of pressure and turbulence within the cylinder cause misfiring even with new conventional plugs.

It was this "suspicion" that clinched Continental Manufacturing Corp. executives' decision to gamble the necessary money and years of time. The end product of this decision is now in mass production, available for your automobile — **an amazing spark plug that has** — by test — fired clean for 50,000 miles and increased the horsepower of a familiar American car by 12½ per cent at 2,000 RPM.

HOW 17 PT. FIRING WORKS. Note LIFE-TIME's electrode design closely. A circular arcing area consisting of four concave segments. Distance (gap) to center electrode being the same from **all** points Electricity has property of arcing from coldest point. Current also arcs more readily from the apex of two planes than from the face of a flat, metallic surface. Note that there are 16 apexes (places where two planes meet) on the outer electrode system — all the same distance from the center electrode. Normal heat and spark erosion are spread around the entire 360 degrees and around the whole circumference of center electrode.

FULL ROTATING SPARK allows overall cooler electrode temperature for greatly increased life. Also allows a hotter spark to prevent fouling yet the rotating and cooling effect minimizes the common faults of burning, erosion, blistering and resultant insulator failure. Compare this principle with the conventional 2-point spark plug design.

Most spectacular spark plug research breakthrough in 50 years allows us to include this unique and unprecedented warranty with every set of LIFE-TIME Spark Plugs. WE GUARANTEE GREATER GAS MILEAGE — GREATER ACCELERATION — A MAJOR POWER INCREASE — OR YOUR MONEY BACK.

YOU RECEIVE BY MAIL this registered set of LIFE-TIME Spark Plugs in proper series (heat range and gap) for the car you indicate in coupon below. NOW AVAILABLE FOR AMERICAN & EUROPEAN PASSENGER CARS, TRUCKS, BOATS, FARM EQUIPMENT, INDUSTRIAL ENGINES.

INDIVIDUAL INSPECTION—Each LIFE-TIME Spark Plug is tested for firing in oil and for resistance to 30,000 Volts /CM!

DEALERS AND DISTRIBUTORS: The LIFE-TIME Spark Plug is now in full production. Write for full details. Distributor: Please inquire as to status of your territory.

DEAR CAR OWNER: The company has finally gotten this plug out of the race, test and economy-run class and made it available for your car at your price. And believe me, it is all we expected. Everyone knows how to make a miles per gallon test and it is an eye-opener with LIFE-TIME plugs, but here is a way you can make a test 15 minutes after you receive your set. Set the brake and block or jack up the rear end. Engage shift in high and shim accelerator pedal with a stop somewhere in the 25-45 MPH range. Take MPH reading with old plugs and then with new LIFE-TIME plugs at same stop. I figure you will show from 3 to 10 MPH increase. I'd enjoy hearing about your results. Many thanks!

Frank E. Williams

FRANK E. WILLIAMS, M.E.
Inventor of LIFE-TIME Spark Plugs

LIFE-TIME Spark Plug Division,
CONTINENTAL MANUFACTURING CORP.
Washington Blvd. at Motor Ave., Culver City 19, California

Gentlemen: Please mail postpaid ..... set(s) (registered) of LIFE-TIME Spark Plugs in proper heat range and gap for my car at 98¢ per plug (set of six, $5.88. Set of eight, $7.84), (or send $1 per set, balance C.O.D.)

Make of my car is ..... Year .....

Model ..... No. Cyl. .....

I enclose $ ..... (check, cash or money order)

Name .....

Address .....

City ..... Zone ..... State .....

YOU can acquire

LAW NIGHTS AT HOME! L L.B. DEGREE

LaSalle's famous Law Library—used as reference in many Law libraries and Law offices—has enabled thousands to master Law surprisingly fast, in spare hours at home, for business and professional advancement.

These 14 remarkable volumes, compiled by leading professors and lawyers, cover the whole basic field of Law in condensed, orderly, simplified manner.

You advance rapidly with this great library, plus special lectures furnished. We guide you step-by-step with personalized Problem Method of instruction . . . you *learn by doing*—handling legal problems—not by memorizing rules.

Send for two FREE 48-page booklets, "Law Training for Leadership," and "Evidence," answering questions about Law and its value to you, and telling how LaSalle Law graduates are winning rapid advancement in business and public life. Mail coupon below. No obligation.

LA SALLE EXTENSION UNIVERSITY
A Correspondence Institution

417 S. Dearborn St. Dept. 483L Chicago 5, Ill.

Send me your two FREE booklets described above, without obligation.

Name..... *Age*.....

Street.....

City, Zone & State.....

ACCORDIONS AT LOWEST WHOLESALE PRICES

5-DAY FREE TRIAL

"PAY AS YOU PLAY"
Small Down Payment As Little As $10 per month

DIRECT from Importer to You!

SATISFACTION GUARANTEED, or your money back! NOW you can save up to 50% by direct purchase from America's leading distributor of famous genuine ITALIAN ACCORDIONS. TRADE-INS ACCEPTED.

MAIL COUPON TODAY - World's Largest Selection

PLEASE RUSH FREE COLOR CATALOG

Name.....

Address.....

City..... *Zone*..... *State*.....

ACCORDION MANUFACTURERS & WHOLESALERS OUTLET
2003 West Chicago Ave. Dept. P-45 Chicago 22, Ill.

REPLATE with METAL NO TANKS USED

ELECTROPLATE

Any object in home, shop, garage or start your own well paying electroplating business. **NEW SIMPLIFIED METHOD**

NOW, using our **NEW** plating outfit you can electroplate any object large or small. No tanks or rectifiers are used. Yet with this kit you do plating that has the same **DURABILITY** and **LUSTER** as done by the most expensive equip. **DEFINITELY NOT A TOY**, yet **VERY EASY** to use. Even non-metals as leather, etc. can be plated. Complete outfit and full course of instructions on plating metal and non-metal objects with nickel, copper, chrome, gold, etc. plus additional data on starting an electroplating business and obtain all the business you desire and make **BIG MONEY**. **ONLY $5.95. SEND NO MONEY.** we will send you everything C.O.D. plus postage. OR SEND $5.95 NOW and receive it postpaid. Try it for 30 days, if not completely satisfied we will immediately refund your money. **SEND TODAY!**

M.Z. NATIONAL SALES CO.
Dept. PS-12
113 West 42nd St. N.Y. 36, N.Y.

JUST A FEW OF THE MANY OBJECTS YOU CAN NOW REPLATE

TOOLS, SILVERWARE, JEWELRY, AUTO PARTS, HOUSEHOLD ARTICLES, BABY SHOES, SPORTS EQUIPMENT, INSTRUMENTS, & 1001 ARTICLES.

MONEY for MEN ALL DATA FREE

THE PLASTEX Industry needs manufacturers on small scale and for big production of Lamp and Clock Stands, Art Goods and Novelties in Plastex and Marble imitation. Experience unnecessary. Liquid material makes regular 10c store sellers. Rubber moulds furnished for speed production. Small investment brings good returns. We are now placing big chain store orders with manufacturers. Ambitious men have chance for real prosperity. Our Free booklet will interest and benefit you.

PLASTEX INDUSTRIES, Dept. 2, 3400 Third Ave., New York 56, N. Y.

STUDY AT HOME

WITH AN EDUCATIONAL INSTITUTION

Courses in **ARTS AND SCIENCES:** Philosophy; Education; Letters; Public Health; Medical Jurisprudence; Psychology; Sociology; Physics; Chemistry; Geology; Pol. Science; Theology; Law; Business and Commerce; Accounting; Mathematics; Statistics; Agriculture. **ENGINEERING:** Electrical, Civil, Mechanical, Drafting, Architectural, Steam, Diesel, Aeronautical, Radio, Structural, Mining, Industrial, Petroleum, Refrigeration, Chemical. Send for free catalog.

McKinley-Roosevelt Incorporated, 4610-A3, Sheridan Rd., Chicago 40, Illinois

---

HOLLYWOOD ANGELS, INC.

COMMON STOCK

The Company will employ its funds in diversified entertainment enterprises connected with TELEVISION and BROADWAY SHOWS.

Price 50¢ a share

HOLLYWOOD ANGELS, INC. *Dept. PS-4*
29 West 65th St., N.Y. 23, N. Y.
TRafalgar 4-1815
Send Free Offering Circular without cost.

Name.....

Address.....

City..... *Zone*.....

State..... *Phone No.*.....

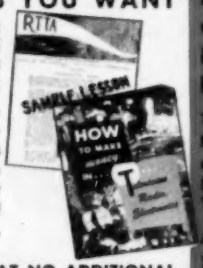
VETERANS! NON-VETERANS!

MY FREE LESSON

MAY CHANGE YOUR ENTIRE LIFE

L. E. Lane, B.S., M.A.
President, Radio-Television Training Association.
Executive Director, Pierce School of Radio & Television.

THREE COURSES TO TRAIN YOU FOR THE JOB YOU WANT



RADIO-FM-TELEVISION TECHNICIAN COURSE — No previous experience necessary. You learn by practicing with the professional equipment I send you. Many of my graduates now have good paying technician jobs with such firms as RCA, NBC-TV, Dumont TV and numerous other TV Studios and plants.

FM-TV TECHNICIAN COURSE — Previous training or experience in radio required. You can save months of time if you have previous Armed Forces or civilian radio experience! Train at home with kits of parts, plus equipment to build BIG SCREEN TV RECEIVER. ALL FURNISHED AT NO EXTRA COST!

EXTRA TRAINING IN NEW YORK CITY AT NO ADDITIONAL COST — After you finish your home study training in either of these two courses, you get two weeks, 50 hours, of intensive Laboratory work on modern electronic equipment at our associate school in New York City, Pierce School of Radio & Television. **THIS EXTRA TRAINING IS YOURS AT NO EXTRA COST WHATSOEVER.** My courses are complete without this extra training, but it gives you added opportunity for review and practice.

TV CAMERAMAN AND STUDIO TECHNICIAN COURSE — Advanced training for men with radio or TV training or experience. I train you at home for an exciting high pay job as the man behind the TV camera.

VETERANS

My school fully approved to train Veterans under New Korean G.I. Bill. Write discharge date on coupon.

EARN WHILE YOU LEARN — Almost from the very start you can earn extra money while learning by repairing Radio-TV sets for friends and neighbors. Many of my students earn up to $25 a week . . . pay for their entire training from spare time earnings . . . start their own profitable service business.

FREE FCC COACHING COURSE — Important for BETTER PAY JOBS requiring FCC License. You get this training AT NO EXTRA COST. Top TV jobs go to FCC-licensed technicians.

ENOUGH EQUIPMENT TO SET UP YOUR OWN HOME LABORATORY

With the equipment I send you as part of your course you BUILD and KEEP a professional GIANT SCREEN TV RECEIVER complete with big picture tube (takes any size up to 21-inch) . . . also a Super-Het Radio Receiver, AF-RF Signal Generator, Combination Voltmeter-Ammeter-Ohmmeter, C-W Telephone Transmitter, Public Address System, AC-DC Power Supply. Everything supplied, including all tubes. My practical, easy-to-understand lessons have brought success to hundreds of men. You, too, can train for a **better-paying job or set up a business of your own if you act NOW!**

Radio Television Training Association

52 EAST 19th STREET • NEW YORK 3, N. Y.

Licensed by the State of New York • Approved for Veteran Training

Just by clipping the coupon below and sending it to me today, you can open up a whole new future for yourself in America's fastest-growing field — Radio-Television-Electronics.

The very day I receive your coupon I will send to you Free a Sample Lesson and my New 36-page Book showing you "How to Make Money in Television, Radio, Electronics" by **STUDYING AT HOME IN YOUR SPARE TIME.**

At absolutely no cost or obligation you can see for yourself how you can begin now to prepare yourself for a better-paying career as a TV repairman, studio technician, cameraman or any one of the many promising jobs in the field that is bringing success and security to hundreds of men — many of them with no more than grammar school education and **no experience whatsoever.**

If you think I was exaggerating when I said, "My Free Lesson May Change Your Entire Life," just see what some of my graduates say about my training —

"RTTA training gave me the skill and know-how to do the work I love best and enjoy better things in life." Harold Gimlen Flint, Michigan

"If it had not been for you, your instructors and the school, I never would have had this opportunity. J. A. Irwin Radio-TV Repairman Coburg, Ont., Canada

"I know I would not have achieved this progress if it weren't for the help and guidance from RTTA." Edward Brouult Chief Radar Operator National Guard Control Falls, R.I.

These letters and many more like them are in my files. The TV Boom that brought good opportunities to these RTTA graduates is still on with no sign of letting up. Don't let opportunity pass you by. Write today for your Sample Lesson, new 36-page book, TV Job Opportunities List, and 48-state list of future TV stations — **ALL FREE!**

MAIL THIS COUPON TODAY!

Mr. Leonard C. Lane, President
RADIO-TELEVISION TRAINING ASSOCIATION
Dept. P-4, 52 East 19th St., New York 3, N. Y.

Dear Mr. Lane: Send me your NEW FREE BOOK, FREE SAMPLE LESSON, and FREE info that will show me how I can make BIG MONEY in TELEVISION. I understand I am under no obligation and no salesman will call.

(PLEASE PRINT PLAINLY)

Name _____ Age _____

Address _____

City _____ Zone _____ State _____

I AM INTERESTED IN:
- ☐ Radio-FM-TV Technician Course
- ☐ FM-TV Technician Course
- ☐ TV Cameraman & Studio Technician Course

VETERANS! Write discharge date

NO SALESMAN WILL CALL!

IF YOU SUFFER PAIN of HEADACHE NEURALGIA NEURITIS

get **FAST RELIEF** with

the way thousands of physicians and dentists recommend.

HERE'S WHY . . . Anacin is like a doctor's prescription. That is, Anacin contains not just one but a combination of medically proved active ingredients. No other product gives faster, longer-lasting relief from pain of headache, neuralgia, neuritis than Anacin tablets. Buy Anacin® today!

Shrinks Hemorrhoids New Way Without Surgery

Science Finds Healing Substance That Relieves Pain—Shrinks Hemorrhoids

For the first time science has found a new healing substance with the astonishing ability to shrink hemorrhoids and to relieve pain – without surgery.

In case after case, while gently relieving pain, actual reduction (shrinkage) took place.

Most amazing of all – results were so thorough that sufferers made astonishing statements like "Piles have ceased to be a problem!"

The secret is a new healing substance (Bio-Dyne*)—discovery of a world-famous research institute.

Now this new healing substance is offered in ointment form under the name of *Preparation H.*® Ask for it at all drug stores —money back guarantee. *Reg. U. S. Pat. Off.

NEW Gov. Release!

Original Cost **$444.00**

HOMELITE "Carryable" GENERATING PLANT

1500 WATT 60 CYCLE, **$189.00 fob**

Single Phase, A.C.

Carrying handles for easy portability. Fits easily in car trunk

Fully Guaranteed

Save Hundreds of $ $ $

PAYS FOR ITSELF! Saves time, labor and money. Provides on-the-spot power for CONSTRUCTION, etc. where none is available or expensive to run in. LARGE ENOUGH for Floodlights; Saws; Pumps; and many more labor-saving, heavy-duty machines. Ideal as a stand-by emergency power plant to duplicate house current. Plenty of power for lights, refrigerator, deep freeze, oil burner, radio, etc. Specifications below CAN'T BE MATCHED anywhere at this price!

GENERATOR 1500-1700 Watts, 115 Volts, 60 cycle, single phase, AC. Overload capacity well above its rated output. Excellent *automatic* voltage regulation plus Field Rheostat for even closer adjustment. Built-in Shock-mounted Volt Meter. Oversize brushes.

ENGINE Famous Homelite single cylinder engine. Air cooled; two cycle. Easy rope start. Dust and rain-proof ignition system. Built-in automatic governor. Foolproof pressure vapor lubrication system. Adjustable jet-type carburetor.

This Precision power plant has ball and needle bearings throughout and costs only 3c an hour to operate. Satisfaction Guaranteed.

SUPPLY LIMITED! IMMEDIATE DELIVERY! ORDER FROM AD

FREE Catalog of Compressors, Motors and Welders

ROBERTS ELECTRIC CO., Dept. S-280, 849 W. Grand, Chicago 22, Ill.

FOOLIS! O PAY MORE—DANGEROUS TO PAY LESS

A TIRE FREE WITH 2 OR MORE TIRES. NOT WW. ADJ. OR TRUCK TIRES

TUBE FREE WITH EVERY TIRE

FREE This pictured Tire Ashtray with 2 or more **TIRES**

CHOOSE YOUR FAVORITE BRAND Family-Safe, Partially Used Tires (Not Recaps)

GOODYEAR **Firestone**

US. GOODRICH & others. 35 Mo. Guar. Bond Against All Defects

600-16	$4.51	670-15	$4.51	TRUCK TIRES		600-20	$7.61
650-16	4.91	710-15	4.51	600-16 (6)	$5.51	650-20	8.31
700-16	5.41	760-15	4.61	650-16 (6)	6.21	700-20	9.41
640-15	4.21	800-15	5.31	700-16 (6)	6.31	750-20	10.01
650-15	4.41	550-15	4.51	700-15 (6)	7.21	825-20	15.71
700-15	4.41	590-15	4.51	750-16	7.11	900-20	15.71
820-15	5.51	550-17	3.71	700-17	7.41	1000-20	14.71
Whitewalls $2 extra				750-17	9.21	1100-20	15.21

SPECIAL! TIRES RELEASED By Co. adjusters. "Near New" Tread Golden Rule 24 MO. "Replace FREE" GUAR. If a tire fails for ANY reason I charge you NOTHING!

Thousands sold at 9.95 ea. We've deducted your 36% Discount. (Whitewalls $1 extra) World's Best Value $6.37 Any Car

MARVIN BLATT 609 Spring Garden St. Philadelphia, Pa.

MILITARY MUD-GRIP TIRES

AA Guar. 20 Mos		AAA 36 Months	
900-16	$10.22	900-16	$13.92
750-20	9.72	750-20	13.52

Send Ck. or M.O. and this Ad for instant Shipment. FOR PHILA. I Personally select your tires—The Name to TRUST in TIRES

TRANSISTOR RADIO!!!

World's smallest and lowest priced transistor set. Just the thing for sportsmen, office workers, children. Polystyrene plastic case smaller than cigarette pack, carry in shirt pocket or purse. Tunes all stations. Operates one month on dime story battery. Play indoors, outdoors, in automobile. Built-in antenna. Assemble in 20 minutes, no soldering iron needed. Complete with tubes and battery —$12.00. Plays through miniature hearing aid button—$8.00 or single small headphone—$2.00. Postpaid. Cash, Check or Money order. EASTERN AUDIO RESEARCH, Box 62, Little Neck 63, N. Y.

100 POUND SET $9.80

Extra Plates Only 10c Pound

BARBELLS

140-Pound, CHROME DELUXE Barbell-Dumbbell set only $16.80. This is our feature set and is the finest ever manufactured.

Training with adjustable weight is the BEST way to keep fit; the ONLY way to develop great strength and a perfect body. As the oldest and best equipped barbell company, BUR gives value and prices no one can equal.

SEND FOR FREE CATALOG.

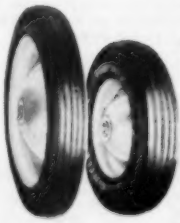
BUR BARBELL CO.

Lyndhurst 5, New Jersey

World's Largest Selection of Home-Study Books, Courses, Texts . . . all at low money-saving prices! Train at home for locksmithing, radio, shoe repairing, watch repairing, real estate, mail order business, piano tuning, short-cut mathematics, criminology, massage, upholstery, hundreds of other money-making subjects. Write today for FREE "Success Catalog." No obligation. Nelson-Hall Co., 210 S. Clinton St., Dept. 8DV-1, Chicago 6, Ill.

Get This FREE CATALOG

Ball-Bearing SPEED WHEELS



JUVENILE WHEELS (No bearing, solid tires)

5"	45c	6"	65c
7"	75c		

(Semi-pneumatic tire, ball bearing)

8x1.25	$1.85	10x1.25	$2.20
8x1.75	1.95	10x1.75	2.30
8x2	2.20	10x2	2.65
12x1.75	$3.45		

INDUSTRIAL WHEELS

(Lug Base. Semi-Pneumatic tire)

6x2 SW	$3.45	10x2.00	$6.10
6x2.00	4.00	10x2.75	5.15
8x2.00	5.20	10x2.75 Pneu.	6.90
8x2.50	5.40	12x2.00	6.90
16x4.00	15.15	12x3.00	9.20

(Smooth Base. Pneumatic tire and tube)

8x3 2 ply	$10.00
10x3.50 2 ply	10.55
12x4 2 ply	14.41
4.00x8 2 ply	13.10
14x4.50 2 ply	15.96

CASTERS—Now Available Write for circulars on all wheels.

No c.o.d. orders. Prices F.O.B. our plant

JIM BROWN TOY COMPANY

1095 HOME AVENUE PS-454 AKRON 10, OHIO

Enjoy happy hobby hours with GOTHAM HOBBIES

PLEASURE AND FUN FOR THE ENTIRE FAMILY!

FULLY ASSEMBLED 1/7 H.P. *Real* DIESEL ENGINE

A perfect power plant for planes, boats, race cars

Enjoy many hours and hours of fun pursuing your hobby with DEEZIL . . . the real diesel engine that runs at 7500 RPM and produces 1/7 HP. Weighs only 5 oz. DEEZIL is not a toy. It's compact, rugged, streamlined. Starts quickly. Simple to install. Every engine test run at our factory to assure perfection. Easy to follow operating instructions.

Ultra precision engine as carefully machine-tooled as giant army engines. Cylinder is honed to .0001 and hand fitted to its individual pistons.

Ideal gift for boys and adults. Send cash, check or money order.

YOURS AT A NEW LOW, LOW PRICE

over 100,000 sold at a higher price

NOW $1.95
Plus 5¢ Postage

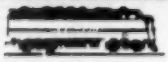
SPECIAL OFFER!
196 page book on model engines
(Giant new hobby catalog included)
Only $1.00 postpaid

MADE IN U.S.A.

ONE DOLLAR ADVERTISEMENT

More GOTHAM HOBBY Values to Choose from!

SEA BABE SPEEDBOAT. 12½" with Electric motor, fully assembled, including fittings. **$4.95**



VARNEY TRAIN OUTFIT.
88 wheels a-rollin',
ready to run Twin-drive loco (shown) with trailing B unit and 9 other assorted cars, including freight, flat, tanker, caboose, etc. Magnificent detail, sturdy construction. Also includes 22 sections of snap-together track and power-pak. Absolutely complete **$40.95**

BIG 3 CRAFTINT OIL PAINTING OUTFIT. Start painting at once. Contains everything you need. Three 12"x12" mounted panels, numbered and ready for painting. Large jars of brilliant pure oil colors, plus 3 artist's brushes. Crucifix then and other religious subjects. Set of 3 **$3.95**

TURRET MICROSCOPE
100-300x power.
A real scientific instrument for exploring the unknown. Well constructed. Precision lens. Fine adjustments. Includes 130-page detailed guide containing photos and interesting information **$17.88**

HIGHWAY PIONEER CAR SETS.
(Model shown 1910 Ford)
Authentic reproductions of cars from nostalgic early days, plus today's foreign sport cars. Begin your collection with these models. Easy to build. Kit contains all parts and paint brush and cement. Available in these models: JAGUAR, MERCEDES, ROLLS ROYCE, STUTZ BEARCAT, FORD. Set of 6 complete **$4.95**

ASTRONOMERS TELESCOPE WITH TRIPOD
30x power. Beautifully designed, compact telescope for viewing the heavens. Precision ground lens. Complete **$22.88**

ONE TUBE RADIO KIT
Not just a toy, but a precision engineered radio with modern circuits and tubes. Will receive local and long distance stations **$7.95**

ADMIRAL FLEET PACK CONSTRUCTION KIT. Atomic submarine (shown). Plastic kits the entire family loves to build. Super-detailed exact scale models. No cutting or sanding required. Just assemble. Build all these models: CARRIER FRANKLIN D. ROOSEVELT 21"; BATTLESHIP MISSOURI 20"; HEAVY CRUISER BALTIMORE 17"; DESTROYER SULLIVANS 15"; PT BOAT 9"; CHRIS CRAFT CRUISER 9"; ATOMIC SUBMARINE NAUTILUS 13". Set of 5 complete **$8.95**

BY NUMBER PICTURE. "The Last Supper" (shown). Christ gathers His disciples in this farewell scene. Large 18"x24" canvas. Hours and hours of pure enjoyment painting portrait scenes. Professional results by amateurs **$4.95**

READY TO RUN MODELS
(Engine included)
No assembly necessary

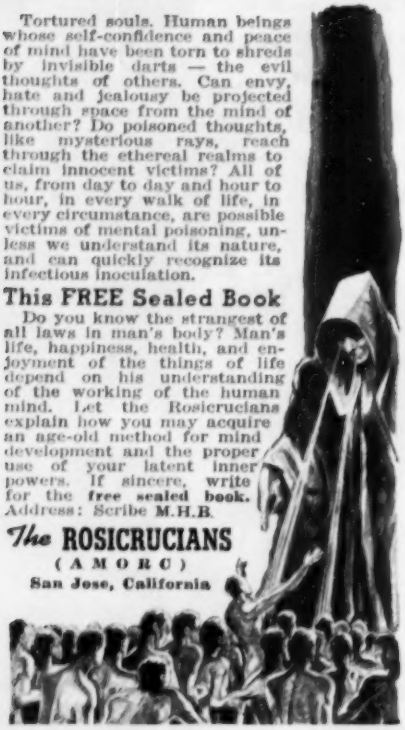
ORDER BY MAIL TODAY
Specify item desired

GOTHAM HOBBY CORP., Dept. S, 107 E. 125th St., New York 35, N. Y.

Mental Poisoning!

Thoughts that Enslave Minds

Tortured souls. Human beings whose self-confidence and peace of mind have been torn to shreds by invisible darts — the evil thoughts of others. Can envy, hate and jealousy be projected through space from the mind of another? Do poisoned thoughts, like mysterious rays, reach through the ethereal realms to claim innocent victims? All of us, from day to day and hour to hour, in every walk of life, in every circumstance, are possible victims of mental poisoning, unless we understand its nature, and can quickly recognize its infectious inoculation.



This FREE Sealed Book

Do you know the strangest of all laws in man's body? Man's life, happiness, health, and enjoyment of the things of life depend on his understanding of the working of the human mind. Let the Rosicrucians explain how you may acquire an age-old method for mind development and the proper use of your latent inner powers. If sincere, write for the **free sealed book.** Address: Scribe **M.H.B.**

The ROSICRUCIANS
(AMORC)
San Jose, California

Don't Neglect Piles and Colon Troubles

FREE BOOK — Explains Dangers of Associated Ailments

Neglected piles, fistula and colon troubles often spread infection. Learn about rheumatic and other associated chronic conditions. Write today for 130-page FREE BOOK. McCleary Clinic & Hospital, 471 Elms Blvd., Excelsior Springs, Mo.

Secrets of VENTRILOQUISM Now Revealed!

Easy to learn in 60 to 90 days with our Home Study Course. **RESULTS GUARANTEED.** Make Money! Be Popular! Have Fun! Big Opportunity! Radio, Television, Stage Appearances! For Free Information regarding price and terms, WRITE. You must state your age. Dummy Catalog 25¢.
FRED MAHER SCHOOL OF VENTRILOQUISM
Box 36, Studio PS4, Kensington Station
Detroit 24, Michigan

LEARN MEAT CUTTING

Train quickly in 8 short weeks at Toledo for a bright future with security in the vital meat business. Big pay, full-time jobs—HAVE A PROFITABLE MARKET OF YOUR OWN! Pay after graduation. Diploma given. Job help. Thousands of successful graduates. Our 32nd year! Send NOW for FREE catalog. No obligation. G. I. Approved.
NATIONAL SCHOOL OF MEAT CUTTING, Dept. 51-Q, Toledo 4, Ohio

OVERLOAD SPRINGS

$9.95 Per Pair postpaid
2000 LB. SIZE $11.95

For cars and trucks. Front and rear. Gives 2000 lbs. extra capacity for all ½, ¾, and 1 ton trucks; 500 or 1000 lbs. extra for all cars except Olds prior to '52, and Buicks. Easily installed. Guaranteed. State make, model.
BRINKMAN MANUFACTURING CO.
2315 Clay Dept. 6-A Topeka, Kansas

BE A WELL-PAID TELEVISION SERVICE TECHNICIAN!

GET DOWN-TO-EARTH PRACTICAL TV TRAINING WITH WTI EXPERTS FOR THE TOP PAYING $5,000-$10,000 PER YEAR JOBS
UHF — COLOR — VHF

Master the latest, up-to-the-minute TV and Color TV developments QUICKLY by working in our BIG SHOPS AND LABORATORIES UNDER THE GUIDANCE OF EXPERT INSTRUCTORS. You can Earn While You Learn, too. W.T.I. Shop trained men are in BIG DEMAND. Develop a highly profitable business of your own following our professional methods. Non-essential math and engineering theory omitted. FREE Part-time employment assistance and Graduate Placement Service. Come to America's Leading Television Servicing School to learn and EARN TOP PAY FROM THE START!
APPROVED FOR VETERANS—We Finance You—Pay mos' of tuition after Graduation. Send for details TODAY!

SEND FOR FREE COPY TODAY!

WESTERN TELEVISION INSTITUTE Dept. M-45
341 W. 19th St., Los Angeles 15, Calif.
Without obligation, please send FREE fully illustrated booklet. (No salesman will call.)
NAME _____ AGE _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

When Writing to Advertisers Please Mention Popular Science

NOW...See the WHOLE ROAD with *NEW* PAN-O-RAMIRROR

Amazing new rear-window mirror keeps full width of road safely in sight. . See everything approaching! Heavy ¼-inch anti-glare tinted plate glass, copper-backed, 12-in. long. Clips over your present mirror. Fits all cars . . . perfect for new, wide rear windows. Money back guarantee.

$3.50 POSTPAID

M. GREEN
DEPT. S-3 54 SPRING LANE, LEVITTOWN, PA.

Spare-Time Income from Gardencrete

Wherever there's pride of home, there's a place for Gardencrete. That's why the sales field is so broad, and so rich in profit potentials.

Gardencrete is basically made of cement and sand, then Colorglazed in a choice of 30 attractive colors that stay new. Easily washed or scrubbed. Add beauty to every lawn and garden.

On a small investment for molds and Colorglazer you can develop a line of products that sell for two or three times your cost of materials and labor. Easily made in shed or garage. We supply full instructions.

Write for book "Make Money." Describes equipment and gives figures on costs and selling prices on dozens of different items.

Bird Baths
Jars and Vases
Flower Boxes
Flagstones
Lawn Seats
etc. etc.

Colorcrete Industries, Inc.
711 Ottawa Avenue, Holland, Mich.

The Bird Bath shown above, sells for $6.50. Cost of materials and labor, $2.25. Your mark-up, $4.25.

POWERFUL MIDGET TV ANTENNA ONLY $1.00

Amazing Television Invention!

Fits Into Palm of Your Hand

AS CLEAR A PICTURE AS WITH $35 ANTENNAS!

Installed in Seconds! Hidden From View! This Powerful Midget outperforms far costlier antennas. Weighs only few ounces. Works on all frequencies. Sensational value at $1.

MONEY BACK GUARANTEE! Junk that old unsightly weak-pulling TV Antenna for this handy, newest Evans All Frequency TV Antenna. See the difference immediately. So low-priced you can't afford to be without this "Midget Wonder". Mechanism fully concealed. Perfect for apartments, where outdoor T.V. Antennas are prohibited.

CLIP THIS AD AND MAIL WITH ONLY $1 plus dime for postage. We'll ship postpaid to your door. If not delighted with improved TV reception, return in 10 days for full refund. Order for yourself and friends today while this bargain offer remains in effect.

EVANS RADIO CO., Dept. 9
650 ASBURY AVE. EVANSTON, ILL.

ENGINEERING DEGREE IN 27 MONTHS

Big Demand for Graduates

AERONAUTICAL, CHEMICAL, CIVIL, ELECTRICAL, MECHANICAL and RADIO ENGINEERING (inc. TV and Electronics).

Hundreds of young men are earning **B.S. ENGINEERING DEGREES** annually in this recognized institution—year around operation. New terms start quarterly. Many students earn a major part of their college expenses in this large industrial center.

Low tuition. Competent instruction. Thorough, intense, practical program. Modern, well-equipped laboratories including new physics laboratory and modern wind tunnel. Individualized instruction emphasized.

Gov't approved for G.I.'s. Engineering preparatory courses. Students from 48 states and 21 foreign countries. Enter June, September December, March. Send coupon for free catalog and full information. Enroll now.

SEND COUPON TODAY

INDIANA TECHNICAL COLLEGE
645 E. Washington Boulevard
Fort Wayne 2, Indiana

Please send me free information on B. S. Engineering degree in 27 months as checked.
☐ Aeronautical, ☐ Chemical, ☐ Civil,
☐ Electrical, ☐ Mechanical, ☐ Radio-Television.

Name.....

Address.....

The thriftier oil filter for your car!

You'll like the Scotch treatment WIX gives your pocketbook. When you join the WIX Clan, you save oil—save engine life—save repairs—with

wix ENGINEERED FILTRATION

There's a WIX HEVI-DUTY Oil Filter Cartridge designed especially for your car, to keep your oil *clean*—and your engine sweet-running. WIX Cartridges more than meet automotive engineers' specifications and do not disturb the detergents in today's heavy-duty oils. Ask your Serviceman for a WIX Cartridge the next time he changes your oil. It's the thrifty way to save your engine.

POROSITE—the modern, pleated paper WIX Cartridge for Full Flow Filtration Systems.

WIX CARTRIDGES are priced as low as $1.50

WIXITE—the outstanding depth-type WIX Cartridge for Partial Flow Systems.

OIL FILTERS wix CARTRIDGES
AUTOMOTIVE • INDUSTRIAL • RAILROAD
WIX CORPORATION • GASTONIA, N. C.
IN CANADA: WIX ACCESSORIES CORP. LTD., TORONTO

More Power for TOUGH JOBS!

Gravely Rotary Mower attachment makes the toughest mowing jobs *easy*. Lawn or weeds, cut 30-inch swath fast and clean with suction-tip, file sharpened knives.

Gravely does jobs other tractors won't . . . because the 5-HP Gravely has the *extra* power that makes tough jobs easy.

Let us show you the advantages of the Gravely's *extra* power . . . all-gear drive . . . power reverse . . . your choice of 21 tools to do every mowing, gardening or upkeep job . . . *faster, better, easier!*

EASY PAY PLAN

Write for FREE Booklet "Power vs Drudgery"

GRAVELY TRACTORS, INC.
BOX 484 DUNBAR, W.VA.

BENJAMIN SUPER CO_2 GAS CARBINE-$16.50

NEWEST TARGET RIFLE—22 IDEAL FOR SMALL GAME

ECONOMICAL
SAFE-NON-TOXIC
ACCURATE-CONVENIENT
PRACTICAL. Easy to operate—No spring recoil – No pumping. Uses low cost Soda Cartridges Cal. 22 Benjamin H-C Pellets and Darts.

New Benjamin CO_2 Rocket Gas Pistol $15.00

WRITE FOR FREE ILLUSTRATED FOLDER OF ALL MODELS
BENJAMIN AIR RIFLES AND BENJAMIN AIR PISTOLS
BENJAMIN AIR RIFLE CO.
852 MARION ST., ST. LOUIS 4, MO. U.S.A.

Tells How You Can Learn to MOUNT BIRDS!

Learn At Home

Men, Boys, Hunters, Fishermen, mount and save your lovely wild-game trophies. Be a Taxidermist. Mount Birds, Animals, Heads, Fish, Ten skins. YOU learn easily, quickly in spare time. Have a grand home-museum. The finest and the greatest hobby known, for sportsmen. Fun, real profits.

FREE BOOK

Yes, FREE, Beautiful strange, valuable Book, telling all about Taxidermy. Contains over 100 beautiful game-pictures. And it's yours FREE, if you rush your request. You can mount all kinds of wild-game, and common specimens too. We can positively TEACH YOU. So GRASP this opportunity. RUSH letter or postal for this amazing FREE BOOK. Don't delay. State your AGE.

N. W. SCHOOL OF TAXIDERMY, 2604 Elwood Bldg., Omaha 2, Neb.

SEND FOR THIS FREE!

Make money. Know how to break and train horses. *Write today for this book FREE*, together with special offer of a course in Animal Breeding. If you are interested in Gaiting and Riding the saddle horse, check here ( ) *Do it today—now.*

BEERY SCHOOL OF HORSEMANSHIP
Dept. 584 Pleasant Hill, Ohio

250 POWER . . . . .

Complete Telescope Lens Kit only $3.49 postpaid

Conquer Space. Explore the Universe, Planets, Moon craters, New Stars, etc. Complete Lens Kit consists of 80 inch focal length ground and polished objective lens, eyepiece lenses for 50 POWER, 100 POWER, 150 POWER, 200 POWER, 250 POWER, and all necessary lens fittings. Easy to make from simple step by step instructions. (Tripod and mount not included.) Money back guarantee.

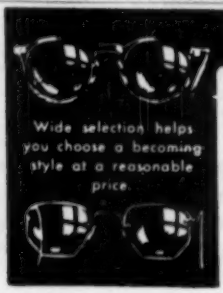
BUSSE SALES CO., Hartford, Conn., Dept. PS31

HE-MAN VOICE!

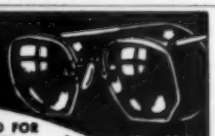
STRENGTHEN your voice this tested *scientific* way. Yes—you may now be able to improve the POWER of your speaking and singing voice . . . in the privacy of your own room! Self-training lessons, mostly silent. No music required.

FREE BOOK Write TODAY for Eugene Feuchtinger's great booklet "How to Develop a Successful Voice." It's absolutely FREE! You must state your age. Booklet mailed postpaid in plain wrapper. No salesman will call. Send your name and age RIGHT NOW! Prefect Voice Institute, 210 S. Clinton St., Studio DV-1, Chicago 6, Ill.

When Writing to Advertisers Please Mention Popular Science



EYE GLASSES BY MAIL



Now buy attractive creations in modern reading-magnifying or bifocal glasses for far or near from the oldest established U.S. firm offering this service! Thousands of customers coast to coast! We furnish 14-lens sample card with many combinations!

as low as $1.95

SEND NO MONEY! 30 DAYS TRIAL!

SEND FOR FREE catalog

ATTRACTIVE STYLES

NAME.....
STREET.....
CITY..... STATE..... DEPT. SP-4

ADVANCE SPECTACLE CO., INC.
537 S. Dearborn St., Chicago 5, Ill.

We will invest these

3 FREE BOOKS

in your future

Life's problems are never simple to solve. In most cases they require help and inspiration from others.

It was Emerson who said—"Our chief want in life is somebody who shall make us do what we can."

Perhaps one of today's most common problems has something to do with an individual's job. "Why can't I make more money?"..."Will I be the next to be fired?"..."Why are others promoted over me?" are some of the questions that plague most of us at some time or another.

If you wonder about *your* job security, about your future, here's help that is yours for the asking. Three FREE BOOKS—any one of which could change the course of your entire life.

Don't put it off. If you are really interested in succeeding, send for these three free books today. Remember, hesitation is one of the greatest causes of failure.

Book No. 1, "How to Succeed," is a gold mine of tips on how a hundred little things about you, your personality, your outlook on life can affect your future. It will help you discover hidden talents in yourself, it will show you how others—less educated, less intelligent than you, perhaps—have overcome all sorts of obstacles and have gone on to success.

Book No. 2 is a complete catalog that outlines opportunities in the field in which you are most interested. It gives you the facts on just what your chances are of succeeding in a given field.

Book No. 3 is a sample I.C.S. lesson text. Literally thousands and thousands of men and women of all ages have won promotions, pay raises, the respect of friends and community through I.C.S. training.

I.C.S. is the oldest and largest correspondence school. 277 courses. Business, industrial, engineering, academic, high school. One for you. Direct, job-related. Bedrock facts and theory plus practical application. Complete lesson and answer service. No skimping. Diploma to graduates.

For Real Job Security—Get an I.C.S. Diploma! . . . Easy-pay Plan . . . I.C.S., Scranton 9, Penna.

INTERNATIONAL CORRESPONDENCE SCHOOLS ICS

BOX 25314D, SCRANTON 9, PENNA. (Partial list of 277 courses)

Without cost or obligation, send me "HOW to SUCCEED" and the opportunity booklet about the field BEFORE which I have marked X (plus sample lesson):

ARCHITECTURE and BUILDING CONSTRUCTION
- ☐ Air Conditioning—Refrig.
- ☐ Architecture
- ☐ Architectural Interior
- ☐ Building Contractor
- ☐ Building Maintenance
- ☐ Carpenter and Mill Work
- ☐ Estimating
- ☐ Heating
- ☐ Painting Contractor
- ☐ Plumbing
- ☐ Reading Arch. Blueprints

ART
- ☐ Cartooning
- ☐ Commercial Art
- ☐ Fashion Illustrating
- ☐ Magazine Illustrating
- ☐ Show Card and Sign Lettering
- ☐ Sketching and Painting

AUTOMOTIVE
- ☐ Auto Body Rebuilding
- ☐ Auto Elec. Technician
- ☐ Auto-Engine Tune Up
- ☐ Automobile

AVIATION
- ☐ Aeronautical Engineering Jr.
- ☐ Aircraft & Engine Mechanic

BUSINESS
- ☐ Advertising
- ☐ Bookkeeping and Accounting
- ☐ Business Administration
- ☐ Business Correspondence
- ☐ Public Accounting
- ☐ Creative Salesmanship
- ☐ Federal Tax
- ☐ Letter-writing Improvement
- ☐ Office Management
- ☐ Professional Secretary
- ☐ Retail Business Management
- ☐ Sales Management
- ☐ Stenographic-Secretarial
- ☐ Traffic Management

CHEMISTRY
- ☐ Analytical Chemistry
- ☐ Chemical Engineering
- ☐ Chem. Lab. Technician
- ☐ General Chemistry
- ☐ Natural Gas Prod. & Trans.
- ☐ Petroleum Engineering
- ☐ Plastics
- ☐ Pulp and Paper Making

CIVIL, STRUCTURAL ENGINEERING
- ☐ Civil Engineering
- ☐ Construction Engineering
- ☐ Highway Engineering
- ☐ Reading Struct. Blueprints
- ☐ Sanitary Engineering
- ☐ Structural Engineering
- ☐ Surveying and Mapping

DRAFTING
- ☐ Aircraft Drafting
- ☐ Architectural Drafting
- ☐ Electrical Drafting
- ☐ Mechanical Drafting
- ☐ Mine Surveying and Mapping
- ☐ Plumbing Drawing and Estimating
- ☐ Structural Drafting

ELECTRICAL
- ☐ Electrical Engineering
- ☐ Electrical Maintenance
- ☐ Electrician ☐ Contracting
- ☐ Lineman

HIGH SCHOOL
- ☐ Commercial ☐ Good English
- ☐ High School Subjects
- ☐ Mathematics

LEADERSHIP
- ☐ Foremanship
- ☐ Industrial Supervision
- ☐ Leadership and Organization
- ☐ Personnel-Labor Relations

MECHANICAL AND SHOP
- ☐ Gas—Electric Welding
- ☐ Heat Treatment ☐ Metallurgy
- ☐ Industrial Engineering
- ☐ Industrial Instrumentation
- ☐ Industrial Supervision
- ☐ Internal Combustion Engines
- ☐ Machine Design-Drafting
- ☐ Machine Shop Inspection
- ☐ Machine Shop Practice
- ☐ Mechanical Engineering
- ☐ Quality Control
- ☐ Reading Shop Blueprints
- ☐ Refrigeration
- ☐ Sheet Metal Worker
- ☐ Tool Design ☐ Toolmaking

RADIO, TELEVISION
- ☐ Industrial Electronics
- ☐ Practical Radio TV Eng'r'ng
- ☐ Radio and TV Servicing
- ☐ Radio Operating
- ☐ Television Technician

RAILROAD
- ☐ Air Brakes ☐ Car Inspector
- ☐ Diesel Locomotive
- ☐ Locomotive Engineer
- ☐ Section Foreman

STEAM AND DIESEL POWER
- ☐ Combustion Engineering
- ☐ Diesel—Elec. ☐ Diesel Eng's
- ☐ Electric Light and Power
- ☐ Stationary Fireman
- ☐ Stationary Steam Engineering

TEXTILE
- ☐ Carding and Spinning
- ☐ Cotton, Rayon, Woolen Mfg.
- ☐ Finishing and Dyeing
- ☐ Loom Fixi'g ☐ Textile Des'ing
- ☐ Textile Eng'r'g ☐ Throwing
- ☐ Warping and Weaving

MISCELLANEOUS
- ☐ Domestic Refrigeration
- ☐ Marine Engineering
- ☐ Ocean Navigation
- ☐ Professional Engineering
- ☐ Short Story Writing
- ☐ Telephony

Name _____ Age _____ Home Address _____

City _____ Zone _____ State _____ Working Hours _____ A.M. to P.M. _____

Occupation _____

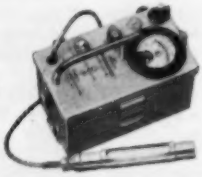
Canadian residents send coupon to International Correspondence Schools, Canadian, Ltd., Montreal, Canada. . . . Special tuition rates to members of the U. S. Armed Forces.

$35,000 REWARD FOR URANIUM

Here's your chance to "cash in!" Over $3,750,000 in Government Bonuses have been paid for URANIUM discoveries in the past 2 years. Currently $175,000 a month is paid to people like you.

Precision Geiger Counters and Scintillators are the finest instruments made for URANIUM prospecting. These highly sensitive instruments are compact, lightweight and ruggedly built for field use. Prices start at $29.95.

CONTACT YOUR NEAREST DEALER
or write direct to factory for FREE 12-PAGE CATALOG and our 24-PAGE BOOKLET with "64 QUESTIONS AND ANSWERS ON GEIGER COUNTERS AND SCINTILLATORS."



DEALERS WANTED

MAIL TODAY FOR FREE INFORMATION

Name _____ Title _____
Company _____
Address _____ City _____ State _____

PRECISION RADIATION INSTRUMENTS, INC.
2235PS S. La Brea, Los Angeles 16, California
World's Largest Manufacturer of Portable Radiation Instruments

Start Your Own Business IN ELECTRIC APPLIANCE Repair!

Repair electrical appliances of friends and neighbors. Service electrical equipment in factories, stores, etc. Work full or part time! New Shop Method home-training system. Rush name today for **FREE BOOK** and special form for getting Electronic Kit, Valuable Heating Element Kits, Advisory Service and Illustrated Instructions on new easy-payment plan. Pay later from **EARNINGS WHILE LEARNING.** Rush name today.

CHRISTY TRADES SCHOOL
4804 N. Kedzie, Dept. D-5001, Chicago 25.

LEFAX TECHNICAL DATA BOOKS
POCKET SIZE • LOOSE LEAF

Printed on loose leaf, 6 hole, 6¼" x 3¾" bond paper, each book contains about 140 pages of technical data, condensed, accurate, essential, for student, engineer, technical worker, business man. **$1.25** each

Architecture	Surveying	Mech'l Drawing	Metallurgy
Home Heating	Surveying Tables	Machine Design	Hydraulics
Illumination	Highway Eng'g.	Machinist's Data	Radio
Electrician's Data	General Math	Mech. of Materials	Television & FM
Builder's Data	Math Tables	Pwr. Trans. Mech.	Electricity, AC
Lumber Data	Physics	Therme. Tbls. & Charts	Electricity, DC
Air Conditioning	Trig-Log Tables	Phys. & Therme. Data	AC Motors & Gen'trs.
Building Constr.	Gen'l Chemistry	Metals	Transformers, Relays & Meters
Reinf. Concrete	Chemical Tables		
Piping Data	Analytic Chem.		

Write for FREE catalogs (2000 listings). See how helpful LEFAX can be to you. Send $1.25 book, or $6 for any five books to

LEFAX PUBLISHERS, Dept. PS-6, PHILADELPHIA 7, PA.

EARN $1000 MONTH

TOOL AND DIE DESIGNERS ARE IN DEMAND—and Acme is the *only* school in America offering *complete* tool and die design training—Acme graduates step right into responsible, high-paying positions. NOW you can take the same course taught in our resident schools by CORRESPONDENCE in your spare time. Training made sure and easy through our famous Cope System. If you can finish high school, you can master this profession! Prepare for a career in an $8000-$15000 yearly salary bracket —write today to ACME SCHOOL OF DIE DESIGN, Correspondence Div. S, 8 N. Jefferson St., Dayton 2, Ohio. *Approved under PL550 for Korean Veterans training.*

FREE—VALUABLE U.S.A. STAMPS!

Scarce genuine postage stamp, as illustrated, picturing first U. S. A. (issued in 1847!); PLUS big collection of 30 all-different United States: 19th century, valuable $5.00 stamp, etc.; PLUS packet beautiful **Commemoratives** including 1893 Columbian, Boy Scouts, Wild West, many others. **EXTRA!** Big illustrated U. S. catalog PLUS other attractive offers for your consideration. Send only 10c to defray mailing expenses!
H. E. HARRIS & CO., 1282 Transit Bldg., Boston 17, Mass

"How to Make Money with Simple Cartoons"

A book everyone who likes to draw should have. It is free; no obligation. Simply address FREE BOOK

CARTOONISTS' EXCHANGE
Dept. 194D, Pleasant Hill, Ohio

High School at Home

MANY FINISH IN 2 YEARS

No classes. No time wasted going to and from school. Progress as fast as your time and abilities permit. Standard H. S. texts supplied. Thousands enroll each year in this 58 year-old school. Send for FREE descriptive booklet.

AMERICAN SCHOOL, Dept. H446
Drexel at 58th St., Chicago 37, Ill.
Without obligation, please send FREE descriptive booklet.

Name .....

Address .....

Canadian Residents: Complete Canadian Course Available. Write American School, 1610 Sherbrooke St., West, Montreal.

MODERN

LAWN MOWER SHARPENER

COMPARE BEFORE YOU BUY

Write for free booklet 11R

Start your own business—increase your income

Sharpens any mower in ten to twenty minutes. Handles complete assembly of all reel types including 36 in. power mowers. Handle, wheels, roller, and engine are not removed.

Oil remains in engine while sharpening. Bed knife sharpened in same centers — no attachments needed.

$263.00, F.O.B. PASADENA

MODERN MFG. CO.
160 N. FAIR OAKS, PASADENA, CALIF.

New TAK-A-PART PICNIC TABLE STANDS

ORDER TODAY

$17.50

F. O. B. KELLOGG

Picnic at home. Have more family fun. Make yard more attractive. Assemble table yourself. All steel tubing furnished. Use scrap lumber for top and seats. New walk-in design. No climbing over seats. Rugged. Lasts a lifetime. Sold direct. Send check or money order to 42 High Street.

MIDWEST METAL STAMPING CO. • KELLOGG, IOWA

POWERFUL! LOW COST!

Light • Rugged • Maneuverable

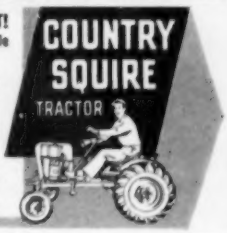
America's best tractor value. More useable power -- pulling, pushing, driving. 770 lbs. Pulls 12" plow. Gear Drive 8.4 Hp. B&S engine. Roller Bearings. B&W 4 speed Trans. Clutch. Diff. Full line implements. 100% satisfaction guaranteed.

Write for FREE CATALOG

COUNTRY SQUIRE TRACTOR CO.

P. O. Box 107 A-4
Muskego Wisconsin

COUNTRY SQUIRE TRACTOR



Work, Sleep, Play In Comfort

Without Nagging Backache

Nagging backache, loss of pep and energy, headaches and dizziness may be due to slowdown of kidney function. Doctors say good kidney function is very important to good health. When some everyday condition, such as stress and strain, causes this important function to slow down, many folks suffer nagging backache—feel miserable. Minor bladder irritations due to cold or wrong diet may cause getting up nights or frequent passages.

Don't neglect your kidneys if these conditions bother you. Try Doan's Pills—a mild diuretic. Used successfully by millions for over 50 years. It's amazing how many times Doan's give happy relief from these discomforts—help the 15 miles of kidney tubes and filters flush out waste. Get Doan's Pills today!

BUILD 15 RADIOS

AT HOME

With the New Improved 1955 Progressive Radio "EDU-KIT"

ONLY $19.95 COMPLETE

NOW INCLUDES

HIGH FIDELITY, SIGNAL TRACER, CODE OSCILLATOR

- Attractively Gift Packed
- Free Soldering Iron
- Absolutely No Knowledge of Radio Necessary
- No Additional Parts Needed
- Excellent Background For Television
- 30-Day Money-Back Guarantee
- School Inquiries Invited
- Sold in 79 Countries

WHAT THE PROGRESSIVE RADIO "EDU-KIT" OFFERS YOU

The "Edu-Kit" offers you a Home Radio Technician Course at a rock-bottom price. You will learn how to identify Radio Symbols and Diagrams; how to build radios, using regular radio schematics; how to wire and solder in a professional manner. You will learn how to operate Receivers, Transmitters, and Audio Amplifiers. You will learn how to service and trouble-shoot radios. You will learn code. You will receive training for F.C.C. license. In brief, you will receive a practical basic education in Radio, worth many times the small price you pay.

THE KIT FOR EVERYONE

It is not necessary that you have even the slightest background in science or radio. The "Edu-Kit" is used by young and old; by radio schools and clubs; by Armed Forces personnel and Veterans for training and rehabilitation. No instructor is required. Instructions are complete, simple and clear. You cannot make a mistake.

PROGRESSIVE TEACHING METHOD

The "Edu-Kit" uses the principle of "Learn by Doing." Therefore you will build radios, perform jobs, and conduct experiments to illustrate the principles which you learn. You begin by learning the function and theory of each of the radio parts. Then you build a simple radio. Gradually, in a progressive manner, you will find yourself constructing more advanced multi-tube radio sets, and doing work like a professional Radio Technician. The "Edu-Kit" Instruction Books are exceedingly clear in their explanations, illustrations and diagrams. These sets operate on 105-125 V. AC DC. Adapter for 210-250 V. AC DC available.

The Progressive Radio "EDU-KIT" is Complete

You will receive every part necessary to build fifteen different radio sets. Our kits contain tubes, tube sockets, chassis, variable condensers, electrolytic condensers, mica condensers, paper condensers, resistors, line cords, selenium rectifiers, tie strips, coils, hardware, tubing, instruction Manuals, etc. A soldering iron is included, as well as an Electrical and Radio Tester. Complete, easy-to-follow instructions are provided. All parts are guaranteed Brand New, carefully selected and matched. In addition, the "Edu-Kit" now contains lessons for servicing with the Progressive Signal Tracer, F.C.C. instructions, quizzes. The "Edu-Kit" is a complete radio course down to the smallest detail. No solder or wire included.

TROUBLE-SHOOTING LESSONS

Trouble-shooting and servicing are included. You will be taught to recognize and repair troubles. You will build and learn to operate a professional Signal Tracer. You receive an Electrical and Radio Tester, and learn to use it for radio repairs. While you are learning in this practical way, you will be able to do many a repair job for your neighbors and friends and charge fees which will far exceed the cost of the "Edu-Kit." Our Consultation Service will help you with any technical problems which you may have.

FREE EXTRAS

• Electric Tester • Soldering Iron • TV Book • Radio Trouble-Shooting Guide • Consultation Service • Quizzes • F.C.C. Training

PROGRESSIVE "EDU-KITS" INC., 497 Union Ave., Brooklyn 11, N. Y.

MAIL TODAY—Order shipped same day received.
30-Day Money-Back Guarantee. INCLUDE ALL FREE EXTRAS.

RUSH ME the Following—Include all Free Extras:
☐ "EDU-KIT" Postpaid. I enclose full payment of $19.95
☐ "EDU-KIT" COD—I will pay $19.95 plus postage
☐ Outside USA: "Edu-Kit" Postpaid. Enclose full payment $20.95
☐ Outside USA: 210-250V. AC/DC Adapter. Enclose $2.50
☐ More details on "EDU-KIT" Free—No Obligation
☐ FREE Radio-TV Servicing Literature. No Obligation

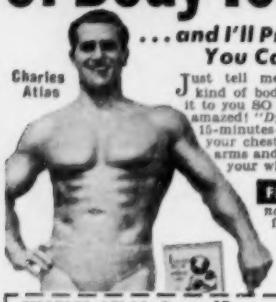
NAME _____

ADDRESS _____

_____

PROGRESSIVE "EDU-KITS" INC.
497 Union Ave., Rm. 528A, Progressive Bldg., Brooklyn 11, N. Y.

Check the Kind of Body You Want



Charles Atlas

. . . and I'll Prove How EASILY You Can Have It!

Just tell me, in coupon below, the kind of body you want—and I'll give it to you SO FAST your friends will be amazed! *"Dynamic Tension,"* my easy, 15-minutes-a-day method, will make your chest and shoulders bulge . . . arms and legs surge with power . . . your whole body feel "alive!"

FREE BOOK 32 pages on how *"Dynamic Tension"* changed me from a 97-pound weakling into "World's Most Perfectly Developed Man"—and how I'll *prove* it can change YOU too. Mail coupon NOW!

CHARLES ATLAS, Dept. 1R,
115 East 23rd St., New York 10, N. Y.

Dear Charles Atlas: Here's the Kind of Body I want:
(Check as many as you like)

- ☐ More Weight—Solid—in The Right Places
- ☐ Broader Chest, Shoulders
- ☐ Powerful Arms, Legs, Grip
- ☐ Slimmer Waist, Hips
- ☐ Better Sleep. More Energy

Send me absolutely FREE a copy of your famous book "Everlasting Health and Strength"—32 pages, crammed with photographs, answers to vital questions, and valuable advice. No obligation.

NAME_____ AGE_____
(please print or write plainly)

ADDRESS_____

CITY_____ STATE_____

THIS INEXPENSIVE EASY-TO-OPERATE MACHINE

Brought Mr. C. H. R. of Ohio $3,688.20 in one season

You, too, can be your own boss in this fine business. Spare or full time, earning big money in your garage or basement.

Yes, C. H. R. is only one of many who write about their success with the Universal Lawn Mower Grinder. Another says, "I am buying a home and my Universal is going to be a tremendous help paying for it." Whether you are buying or want to buy a home, want the security of a sound future or living comforts extra money brings, you owe it to yourself to send the coupon today. Investigate our success plan now—get everything you need to develop a good profitable business of your own.

ROGERS MFG. CO., DEPT. P-45, LINDSEY, OHIO

Fill in and mail this coupon now

Rogers Mfg. Company
Dept. P-45, Lindsey, Ohio

Gentlemen: Please rush me details about the profit possibilities of the Universal Lawn Mower Grinder.

NAME.....

ADDRESS.....

CITY..... STATE.....

ROGERS MANUFACTURING COMPANY LINDSEY, OHIO

FREE! U. S. AIRMAIL STAMPS

3 other offers FREE!

Rush reply *today*! Scarce collection, beautiful, hard-to-get U. S. Airmail stamps — *all genuine, all different*! Also included at *no cost to you* — handsome souvenir World's Rarest Stamp in color! PLUS helpful "Stamp Collector's Guide"! PLUS valuable ½ penny Falkland Island Stamp and details about 8 more! Other offers for your *free* inspection. Rush name, 10¢ for postage, handling — *limited time offer*! GARCELON Stamp Co., Dept. PS4A, Calais, Maine.

TASOPE PHOTO-ENGRAVING PLANTS

MATERIAL COST OF THIS CUT 1½¢ SELLING PRICE $1.00 AND UP

Establish your own profitable PHOTO-ENGRAVING business. Make cuts for newspapers, printers, and advertisers. Make etched name plates, plaques etc. Instructions furnished, no experience necessary. Sold direct from factory since 1931. First five hundred cuts sold locally or by mail will pay for plant and pay you well for your time. Write for FREE catalog.

TASOPE, DEPT. PS-4, AURORA, MO.

DAN LURIE
"America's Most Muscular Man" —on television's "Big Top."

Write for Free Catalog

FAMOUS DAN LURIE

BARBELLS

with 4 courses—low factory prices

50 lb. set....$ 8.48	150 lb. set....$20.48
100 lb. set.... 13.98	200 lb. set.... 25.98

Order by Mail: 50% with order, bal. C.O.D. Extra wts. 13c per lb., F.O.B. plant

DAN LURIE BARBELL CO.
52-54 Bristol St. Dept. 5700 Brooklyn, N.Y.

HYPNOTISM

Be Popular Amaze Entertain

Learn to apply Hypnotism and Autosuggestion in short time by training at home, with GUARANTEED RESULTS—DON'T DELAY. Write to America's oldest, most famous Hypnotic school for free information—now—today. Sent in plain wrapper.

SCHOOL OF APPLIED HYPNOLOGY
Dept. 24 120 Central Park South N. Y. 19, N. Y.

Just put our AUTO LIFE into your engine. It instantly goes to work to put a metal film around the rings and cylinder walls. With just 15 minutes of your time you have the equivalent of an expensive overhaul, for the fraction of the cost. It's so easy, anyone can do it. Nothing else to buy. SEND NO MONEY. We will send you AUTO LIFE C.O.D. plus postage. Or send $1.95 NOW and receive it postpaid. If after trying AUTO LIFE for 30 days, your car doesn't STOP OIL BURNING, GET MORE PEP, BETTER GAS MILE AGE and are not completely satisfied, we will immediately refund your money.

AUTO CHEMICAL LIFE IND., 230-B DIVISION ST., NEW YORK 2, N. Y.

FINE WORK CLOTHES
AT LESS THAN
1/3 COST!
STERILIZED, CLEAN-AS-NEW

Surplus Stock. Terrific Values!

PANTS Worth $3.95 new! You get 4 used pairs for less than the price of 1 new pair! Navy or green. Send waist and inside leg measurements. **99¢** 4 for $3.75

SHIRTS to Match. (Made to sell for $2.99). 4 for the price of 1! Sturdy fabrics for long tough wear. Send neck size. **79¢** 4 for $2.99

COVERALLS. Made to sell for $5.95. Yours for less than ⅓! Send chest measurement. **$1.95** 3 for $5.45

MONEY BACK GUARANTEE If you're not convinced these are terrific bargains, return 'em within 10 days for full refund. Order today. C.O.D., or send money and we'll pay postage.

$1.00 Deposit Required on C.O.D. Orders.

TRU VALU SALES CO. Dept. PS-16 1294 E. 9th St. Cleveland 14, Ohio

FUN & PROFIT IN MOSAIC KITS!

EVERYTHING you need to make a smart Italian glass mosaic table . . . in minutes! 225 Italian glass mosaic tiles; wrought iron frame 12½" sq.; masonite board; 1-lb. can special cement; complete instructions. Perfect as end, stacking or coffee table, telephone stand. Make it to keep or sell for real profit. Choice of shades in green, blue, beige, grey or multi-colored. Sensational $14.95 value for low $8.75. Send check or m.o. today. (Also available: Hot plate, trivet or wall plaques, 4" x 4" $2.50; 6" x 6" $2.98.) All shipping charges C.O.D.

BON BAZAR, 228 W. 4th St., N.Y.C. 14 $8.75

FREE OIL FILTER REPLACEMENTS

Buy the ZENICK Permanent Porous Bronze Filter Element for only $3.95! Then, no more filter elements to buy! Guaranteed 10 years or life of car. Fits all cars and light trucks. State make of car when ordering. Only $3.95 p.p. Money Back Guarantee. Dealer Inquiries Invited.

ZENICK PRODUCTS CORP. Dept. 10
Box 2461 Los Angeles 54, California

INVESTIGATOR TRAINING

Experience unnecessary.
Many opportunities.
Send for Free particulars.
Free credentials.

EXCHANGE SECRET SERVICE SYSTEM
4554 Broadway Chicago 40, Ill.

— — — MAIL COUPON FOR QUICK ACTION! — — —

Exchange Secret Service System
4554 Broadway, Chicago 40, Ill.

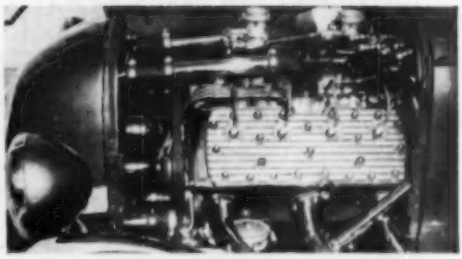
Without cost or obligation please mail Free particulars

Name.....

Address.....RFD or Zone.....

City.....State.....

IF YOU "EAT, SLEEP AND LIVE" CARS...
TURN YOUR HOBBY INTO A CAREER!



Get America's Big-time, Big-future

AUTO MECHANICS & DIESEL COURSE *at home in your spare time!*

Los Angeles' *National Schools*, America's automotive Technical Trade School since 1905, now brings its famous resident Shops and Faculty direct to you at home—to prepare you to earn more money, with job security, in today's fast-moving, opportunity-filled Auto Mechanics Industry! Get *your* home training from the "Car Capital of The World"—America's most auto-minded city, center of Hot Rod and Sports Car activity! Mail coupon right now!

"SHOP-METHOD" HOME TRAINING!

YOU MASTER ALL PHASES, INCLUDING DIESEL! All lessons fully illustrated. Latest equipment covered.

THIS SET OF LIFETIME TOOLS IS YOURS! Also all-metal tool box. Part of your course, yours to keep.

EARN WHILE YOU LEARN! We show you how to start Spare Time Earnings soon after enrollment.

ATTENTION MEN OF DRAFT AGE. Learn how you can achieve higher rating and pay. Mail coupon *at once!*

APPROVED FOR G. I. TRAINING. Both Home Study & Resident Courses. Free help with technical and personal problems—Job Placement Service.

Send for FREE FACT-BOOK AND SAMPLE LESSON!
NOW! 2 offices to serve you faster! Mail coupon today to one nearest you!

NATIONAL SCHOOLS

Technical Trade Training Since 1905
LOS ANGELES 37, CALIFORNIA
IN CANADA: 811 West Hastings Street, Vancouver, B. C.

MAIL NOW TO OFFICE NEAREST YOU!

(mail in envelope or paste on postal card)

NATIONAL SCHOOLS, Dept. DC-45

4000 S. FIGUEROA STREET LOS ANGELES 37, CALIF. OR 323 WEST POLK STREET CHICAGO 7, ILLINOIS

Send *FREE* Auto-Mechanics Book and Sample Lesson. No obligation, no salesman will call.

NAME..... BIRTHDAY.....19....

ADDRESS.....

CITY..... ZONE.....STATE.....

☐ Check if interested ONLY in Resident School Training at Los Angeles.

VETERANS: Give Date of Discharge.....

EVEN IF YOU DON'T KNOW A NOTE OF MUSIC NOW...

YOU CAN LEARN YOUR FAVORITE INSTRUMENT THIS EASY A-B-C WAY

No special "talent," no previous training needed. This U. S. School home-study method is so successful because you learn to play by playing real tunes by note, right from the start. And just think, you can learn your favorite instrument for only a few cents a day! If interested, mail coupon for FREE 36-page Book showing how easy it is to learn any instrument, right at home, in spare time, without a private teacher. No obligation; no salesman will call on you. **U.S. SCHOOL OF MUSIC, Dept. A154, Port Washington, New York. (57th Year)**

U. S. SCHOOL OF MUSIC,
Dept. A154, Port Washington, N. Y.

Please send me your 36-page illustrated Free Book. I would like to play (Name Instrument).

Instrument _____ Have you Instrument? _____

Name _____
(Please Print)

Address _____

DO-IT-YOURSELF!

Modernize with prefinished MARLITE PLANK & BLOCK

A hammer, saw, and level are all you need for beautiful walls, quickly installed. Planks (16" x 8') and Blocks (16" square) with exclusive tongue and groove joint are easily applied over old or new walls. Soilproof baked finish fused to a tempered hardboard never needs painting, cleans with a damp cloth. Ten "Companion Colors," plus 4 distinctive wood patterns, practical for every home interior.

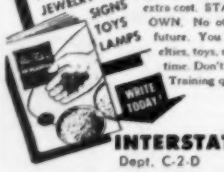
Write for free folder and do-it-yourself instructions, or see your lumber dealer. Marsh Wall Products, Inc., Dept.426, Dover, Ohio. Subsidiary of Masonite Corp.

Marlite Plank and Block Patent Applied For

Marlite
PREFINISHED
WALL and CEILING PANELING

Made with genuine Masonite® Tempered Duolux®

MAKE EXTRA MONEY **PLASTICS** LEARN AT HOME



There are RICH OPPORTUNITIES for MEN and WOMEN with "know-how" in Plastics. Interstate's new Plastics course tells and shows how to make hundreds of fast selling items out of Plastics. Gives complete training in fabrication, casting, lamination, molding, internal carving, etc., in simple, easy, step-by-step language and pictures. Plastics and Fabricating Kits for 23 valuable Plastic items come with training at no extra cost. START A PLASTICS BUSINESS OF YOUR OWN. No other industry holds such promise for the future. You can make big money manufacturing novelties, toys, signs, etc., in your own home in spare or full time. Don't wait! Learn NOW how Interstate's Plastics Training qualifies you for success in the Plastics field.

PLASTICS AND SUPPLIES FURNISHED FOR 23 VALUABLE PROJECTS

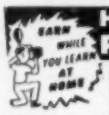
INTERSTATE TRAINING SERVICE
Dept. C-2-D Portland 13, Oregon

CUT BUILDING COSTS ⅔

Make Your Own Concrete BLOCKS and BRICKS To Use or Sell

New superior moulds make absolutely square, true, easy-to-lay blocks which will pass any building code. Production is fast . . . easy. One durable $30 machine will make four 5"x8"x12" blocks per minute—1,000 a day. Pays for itself in one day! Sell blocks for big profit . . . or save ⅔ building cost for yourself. POST CARD BRINGS FREE FOLDER.

ECONOMY MFG. CO.
DEPT. S STONE MOUNTAIN, GA.



How to Make Money in PHOTOGRAPHY

If you are OVER 17—good pay, fascinating work await you in photography! Start making money quickly in spare-time—step into your own studio or exciting job. LEARN-BY-DOING method trains you at home! Write TODAY for FREE catalog. Also Resident Training. Co-ed. 45th Year! GI Approved.

Send for FREE BOOK

NEW YORK INSTITUTE OF PHOTOGRAPHY
Dept. 5, 10 W. 33 St., New York 1, N. Y.

STUDY INDUSTRIAL DESIGN

You can train at Art Center School in California with practicing-professionals for upper-level jobs in INDUSTRIAL DESIGN. Recent graduates have been added to the staff at General Motors, Chrysler, Raymond Loewy, Henry Dreyfuss, etc. Majors in transportation, general product design, structure, community development, furniture design, packaging, display. 4-year degree courses. Learn to combine imaginative design with technical proficiency, coordinate utility and beauty. Stimulating environment. Field trips. Advantages of mild Southern California climate and nearby holiday spots. Coed. Placement service. Established 24 years. New term begins May 31. Write for catalog.

ART CENTER SCHOOL, Edward J. Adams, Director
5353 WEST THIRD STREET, LOS ANGELES 5, CALIFORNIA

SKIN DIVER ACTION!

Dr. Nelson E. "Doc" Mathison presents his newest skin diving equipment for pool, lake and ocean. World's newest and fastest growing sport.

THE COMPLETE SET INCLUDES:

- **Precision-made safety spear gun powered by rubber sling**
- **Swim mask with extra plate for pool**
- **Whale Tail fins made of gum rubber**
- **Plastic snorkel tube**

Please state shoe size

Send Cash, Check or Money Order.
(In Calif. add 4% Sales Tax)

***ONLY* $14.95** complete postpaid

Dr. MATHISON
2656 Fashion Ave. Long Beach 10, Calif.

PERSONAL POCKET STAMP

With— YOUR NAME ADDRESS CITY STATE

ONLY $1.00 POSTPAID

(OR ANY WORDING ON 3 LINES)

This handy 3-Line Pocket Stamp in a nickel plated metal case with inked pad and collapsible handle complete in one unit. Ready for use. SIZE 2"x⅝".

IDEAL FOR STAMPING YOUR PERSONAL EFFECTS BOOKS—PAPERS—CHECKS—ETC.

Send $1.00 Check or Money Order. No C.O.Ds.
4th line add 35c extra

A. C. M. Co., Dept. P S
20-11 Steinway Street, L. I. C. 5, N. Y.

NEW FALSE PLATE

FROM YOUR OLD ONE IN 18 HOURS

AS LOW AS $14.95

Send us your old broken, cracked or loose plates and we'll transform them into new lightweight wonder plastic plates. NO IMPRESSIONS needed with our revolutionary method. We use your own old plates. We remake them completely in only 18 hours. Missing teeth carefully matched and replaced. We GUARANTEE TO SATISFY YOU OR REFUND YOUR MONEY.

SEND NO MONEY—Send us your name today and we'll **RUSH** COMPLETE DETAILS. Begin to enjoy life right now. Clip this Ad; save it and send for free facts.

CHICAGO DENTAL PLATE LABORATORY • Dept PS-455
30 N. Dearborn St. • Suite 807 • Chicago 2, Ill.

PROTECT YOUR EYES!

(And Eyeglasses Too)

Now . . . With the same SAFETY GOGGLES as used in Industrial Plants, you can shield your eyes against flying particles around machine operations such as saws, lathes, grinders, drill presses, etc.

A fine one-piece, full-view goggle formed of clear plastic . . . yours for only $1.95 postpaid.

A Perfect Goggle For: • Home Workshop • Machine Shop • Automobile Repair Work • Farm Work

Has easy-to-adjust elastic headband, holds lightweight form-fitting goggles comfortably. ORDER YOUR SAFETY GOGGLES TODAY! Available in clear or green; please state which. Moneyback guarantee.

FITS OVER REGULAR GLASSES

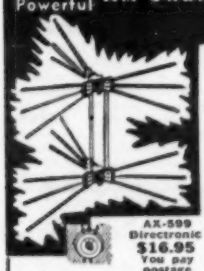
only $1.95 POSTPAID

WRITE FOR FREE CATALOG

CRAFTLINE P.O. Box 9197-S RICHMOND 27, VA.

Super Powerful

All Channel TV RECEPTION IN ALL DIRECTIONS



AX-599 Directronic $16.95 You pay postage

Rocket DIRECTRONIC MOTORLESS TV ANTENNA

360° Electronically Switched Beam

- **No Motors**
- **No Roof Orientation**
- **No Electric Power**
- **No Ghosts**
- **Flick of Switch Clears Picture Instantly**

In the city or in an ultra-fringe area, the Directronic will out-perform ordinary antennas. Only the Motorless 360° Directronic TV Antenna offers "around the compass" reception WITHOUT Rotors. Clarity of picture will amaze, it's so bright, so sharply defined. AX-599 "Serviceman's Array" contains Hi-Pac molded insulator of extremely high tensile strength, 18 hi-tensile aluminum alloy elements, 1 set connecting stubs (3), Universal U-Clamps for masts to 1¾". Directronic Beam Selector, 75' Tri-X Cable. 25% deposit on C.O.D. orders, please. Money Back Guarantee.

NATIONAL ELECTRONICS OF CLEVELAND
6608 EUCLID AVE., DEPT. S-4 CLEVELAND 3, OHIO

Ventshades®

KEEP RAIN AND SUN OUT— LET FRESH AIR IN—

Add to the beauty of your car

Four-piece sets for 2 and 4 dr. Sedans $8.75
Two-piece (full-length) Hardtop sets $15.00

No more closed windows when it rains. No more stifling in stuffy air. With smart, new Ventshades on your car, you can leave the windows open a little, even in a cloudburst. Fresh air comes in—rain stays out. And fogging of the windshield is practically eliminated. When the sun is bright, Ventshades shield your eyes from harsh overhead glare, create a softer light inside the car.

Ventshades give your car an extra touch of streamlined beauty, too. Custom-built for each make and model of car, they blend with the body lines—look like a built-in feature—add smartness without being conspicuous. Made of heavy-gauge, highly-polished stainless steel. Can't rust or rattle. Easy to install—just drill holes and insert screws furnished. Available for cars of almost every make and model back to 1940. Get your Ventshades now and enjoy a lot of extra driving pleasure.

SEE YOUR DEALER. If he can't supply, order direct on coupon below. Satisfaction guaranteed.

AUTO VENTSHADE CO., Dept 4, Chamblee, Ga.
In Atlanta's Finest Industrial Suburb

Auto Ventshade Company, Chamblee, Georgia:
Please send me a set of Ventshades to fit this car:

Yr.	Make	Model or Series	Body Style

(Check one)

SEDAN $8.75 ☐ I enclose full price of $8.75. You pay postage.
☐ I enclose $2. Ship COD for balance, plus postage.

HARDTOP $15.00 ☐ I enclose full price of $15.00. You pay express.
☐ I enclose $5. Ship COD for balance, plus express.

Name _____

Address _____

City _____ State _____

PREPARE FOR BETTER JOB, BIGGER PAY IN SPARE TIME AT HOME

Today, choose the job you want—and prepare for it in time you might otherwise waste. Or if you are already in the work you like best, start training now for quicker promotion and increased pay. During more than 50 years AMERICAN SCHOOL has helped ambitious people to reach higher goals. Check subject that interests you and mail coupon for full information.

AMERICAN SCHOOL, Dept. G446, Drexel at 58th, Chicago 37, Ill.

Without obligation, please send FREE and postpaid, full particulars about the subject checked below:

- ☐ Accounting
- ☐ Apprenticeship Courses
- ☐ Architecture & Building
- ☐ Automotive Technician
- ☐ Better Foremanship
- ☐ Bookkeeping
- ☐ Business Management
- ☐ Civil Engineering
- ☐ Contracting
- ☐ Diesel Technician
- ☐ Drafting—Building Trades
- ☐ Drafting—Machine Trades
- ☐ Electrical Engineering
- ☐ Electricity—Practical
- ☐ Electronics—Industrial
- ☐ High School Courses
- ☐ Machine Shop Operations
- ☐ Mathematics & Slide Rule
- ☐ Mechanical Engineering
- ☐ Plastics Engineering
- ☐ Plumbing—Practical
- ☐ Private Secretary
- ☐ Retail Merchandising
- ☐ Salesmanship—Outside
- ☐ Sheet Metal Work
- ☐ Tool Making

NAME.....

OCCUPATION.....

HOME ADDRESS.....AGE.....

CITY.....STATE.....

Canadian Residents: Write American School, 1610 Sherbrooke St. West, Montreal

MAIL COUPON NOW

Table-top workbench makes gluing easier...

FULL-SIZE PATTERN FOR WORKBENCH ONLY 35¢:
EASI-BILD® Pattern #573. Just trace, saw, assemble. Send 35¢ in cash or stamps to Elmer's Pattern Dept. PS-45, P.O. Box 215, Pleasantville, N. Y.

ELMER'S® GLUE-ALL

makes it better!

Every home craftsman needs this inexpensive, easy-to-make workbench that fastens to any table top. To make gluing jobs easier, it features a vise that doubles as a clamp to hold wood securely. The only other thing you need for perfect gluing jobs is Elmer's Glue-All . . . the modern plastic glue. It's *strong*—shear tests of glued joints prove it stronger than the wood itself. Quick-setting, too—and won't stain. Easy to use in the convenient squeeze bottle that eliminates muss and waste. Keep it handy for all gluing jobs. Product of The Borden Company.

1¼-oz. 29¢ — 8-oz. $1.00

At leading hardware stores.

DEALERS INQUIRIES INVITED

JUNIOR MIDGET

Get in on Micro-Midget racing, America's newest, most exciting, and fastest growing sport. Speeds up to 30 M.P.H. on a 1/10 mile track. Can be purchased in kit form or complete ready-to-run. Send 25 cents for completely illustrated literature describing all details.

- 6 H.P. High Speed Engine
- 50 M.P.H. Top Speed
- Soundly Engineered
- Precision-Built
- Compact Sturdy Construction
- Dependable Operation
- Moderately Priced

COMET MANUFACTURING CO
DEPT. 22 P.O. BOX 1882 • • SACRAMENTO, CALIFORNIA

FREE BOAT KIT CATALOG

Write:

8' to 14' Models from $39.95 incl. freight

- Assemble your own boat
- No experience necessary
- Save 1/3 to 2/3 "factory built" prices

12 ft. Runabout Pictured

Marine Hardware, Trailers, Fiberglas

LUGER INDUSTRIES DEPT. A 6452 NICOLLET AVE. MINNEAPOLIS 9, MINN.

Also ADULT 2 Passenger "Eshelman" SPORT CAR

1/5 the cost of any other auto

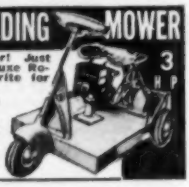
70 Miles per Gal.

Free Catalog

ESHELMAN RIDING MOWER

Better, Faster, Easier! Just ride along on this deluxe Rotary Lawn Mower. Write for Free Catalog. Also Garden Tractors from $69

ESHELMAN CO., Dept. M-44, 109 Light St., Baltimore 2, Md. 353 North Michigan Avenue, Chicago 1, Illinois, 6087 Sunset Boulevard, Los Angeles 28, Calif.



When Writing to Advertisers Please Mention Popular Science

Free! 153 GERMANY

Giant and midget-sized **STAMPS**; hated Hitler heads; blood-red swastikas; inflation issues with pre-war face of millions of dollars; Allied and Russian Occupation issues; animals, birds, airmail stamps—153 all-different, guaranteed worth $2.46 at Catalog prices. **EXTRA!** Free booklet, bargain lists, and other fascinating offers for your free consideration. Send 10c for mailing expenses. Supplies limited. *Act NOW!*

USE THIS HANDY COUPON

JAMESTOWN STAMP CO., D-137, Jamestown, N.Y.
RUSH my FREE Collection of 153 Germany & other offers. I enclose 10c for cost of mailing.

Name .....

Street .....

City ..... State .....

FIND URANIUM!

U-238C Geiger Counter

20th Century "prospectors" — hunters, fishermen everywhere — are piling up millions of dollars in cash bonuses for uranium discovery! Prospecting is easy with Goldak's bantam-weight U-238C geiger counter — superlative, triple action detector. "Zero-in" with multi-range meter, loud clear audio signal and special neon flasher!

More sensitive scintillation counters available for field and airborne use. Also — famous line of Goldak metal detectors, priced from $49.50. Complete details on request.

FREE! *Latest Electronic Information!*

"DO IT YOURSELF" FANS . . .
Write for free literature today!
Dealer Inquiries Welcome

GOLDAK COMPANY
1544PS West Glenoaks Blvd. • Glendale, California

CASTING SECRETS REVEALED!

Now you can learn how to make big money by casting thousands of perfect plaques, book ends, figurines, etc., with X.L. rubber molds.
NO EXPERIENCE, VERY LITTLE CAPITAL NEEDED
X.L., Rubber, Pts. $2.50; Qts. $4.00 (postage extra). Molds and enough rubber for three molds, $1.50 prepaid. U.S. only. Send 25¢ (refunded with order) for informative catalog (40 pages) describing this wonderful, exciting *Profit-making* business.

HUGE PROFITS! MORE MONEY!

PLASTIC ARTS STUDIO 3403 S. MADISON, DEPT. 3 MUNCIE, INDIANA

BECOME AN EXPERT IN TRAFFIC

The Traffic Executive today is one of the most important and well paid positions in industry and transportation. Thousands of firms need experts on rates, tariffs, regulations, etc.

We train you thoroly at home in spare time thru the famous LaSalle Problem Method under the guidance of expert traffic authorities.

For nearly 50 years LaSalle has been helping ambitious men get ahead in this interesting and profitable field. Course compiled and reviewed by 175 of the country's leading traffic executives.

Get the facts. Mail coupon today for FREE 48-page book, "Traffic Management—the Fast Growing Profession" and learn of the opportunities in Traffic, and how you can become expert in this field.

LASALLE EXTENSION UNIVERSITY
A Correspondence Institution
417 S. Dearborn St., Dept. 483T, Chicago 5, Ill.

Name.....
Address.....
City.....*Zone*.....*State*.....

Take a note from sticking trumpet valves!

Free your car's engine from harmful deposits to UNLOCK HORSEPOWER

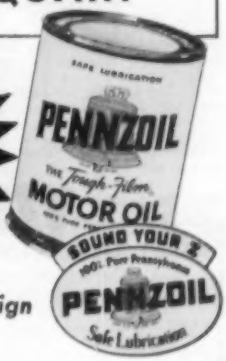
Trumpet or engine, deposits can cause valves and other vital parts to stick. Then rhythm is gone and the *tune* goes sour. In your engine it means lost power, wasted gasoline, excessive wear.

Pennzoil with Z-7 disperses all harmful contaminants, lets THE *Tough-Film*® lubricate completely—*unlocking* engine horsepower for instant response, better gasoline economy.

Next time, change to Pennzoil with Z-7 and *feel* the difference!

Sound your Z for the LONG QUART

NOW with Z-7 the POWER INGREDIENT



Switch now at this sign

BETTER DEALERS IN EVERY STATE FEATURE PENNZOIL® PRODUCTS

© 1955, The Pennzoil Co., Oil City, Pa., Member Penn. Grade Crude Oil Assn., Permit No. 2

TRAINED MEN NEEDED

BIG PAY—GOOD FUTURE

☐ TELEVISION ☐ ELECTRONICS
☐ DIESEL ☐ AUTO

WHY WORK FOR LOW PAY or risk being out of a job??? Usually the properly trained man has a steady job . . . through good times or bad. Even back during DEPRESSION there was a *big demand* for Bailey Trained men.

In only 5½ to 6 months we can train YOU to enter one of the big pay fields!

No previous experience or special education necessary. With our method of training you do not spend years pouring over books, figures, charts and graphs. You learn by rebuilding, repairing, testing and operating the most modern equipment, under the guidance of experienced, courteous and friendly instructors. This method of training gives you the experience and confidence required to step right into the big pay jobs without spending years as a mechanic's helper.

It's EASIER and COSTS LESS than you may think to get this residence shop training . . . we help you find part-time jobs while in school—full-time jobs after graduation. Check subject above in which you are interested and mail for complete information.

BAILEY Technical SCHOOLS
Veteran Approved
1632 S. Grand St. Louis 4, Mo.

NAME.....AGE.....
STREET.....
TOWN.....ZONE.....STATE.....

FOUND IN BRITAIN!

$14.95

ENFIELD COMMANDO REVOLVER

Designed and ordered by the British Commando force (WW II), a rare and unusual weapon and a never-again value. This gun would sell new for 60.00. We have found and purchased a small lot which we believe are the last anywhere in the world. All guns in Very Good cond., bores perfect. This is modern breaktop design with the strongest stirrup type lock ever made, allowing it to be reloaded with one hand at a dead run. A powerful big weapon, it fires .38 S&W ammunition. Every gun bears British Crown and Broad Arrow ordnance marks. Has lanyard ring, special, non-slip grips, two-side (R&L) thumb rests. A rare and valuable addition to any collection, a fine shooting piece. To Order: Send check, cash or money order. Shipped F.O.B. Pasadena. For C.O.D. send ⅓ deposit.

GOLDEN STATE ARMS CORP. 33 Bowling Bldg.
972 East Colorado Street Pasadena 1, California

NEW ADVERTISING MACHINE

Prints & Illustrates Postal Cards

Learn how businesses are now boosting sales in spite of conditions—with ad messages—printed on government postals with amazing new patented **CARDMASTER.** Guaranteed five years. Low price—sold direct. SEND NAME for FREE illustrated book of money-making ideas and complete unique advertising plans. Send your name today to **CARDMASTER CO.,**
1920 Sunnyside Avenue, Dept. 13-D, Chicago 40, Ill.

• NEWER
• BETTER
• MORE PRACTICAL

GRAND SPECIALTIES CO.

GRAND SAFETY DOOR HOLDERS

A Type and Size for Every Door—Popularly Priced
On Display at Hardware and Lumber Dealers
Chicago 22, Ill. DEPT. 19

DON'T BE CAUGHT WITH A DEAD BATTERY

Amazing "New Life" battery rejuvenator stops build-up of plate sulfates . . . keeps battery automatically charged. Use lights, heater, radio, as much as you like. Get faster starting! Greater power! *RECHARGING IS UNNECESSARY!* Only one treatment needed! Money back guarantee. Rush $1.00 to:

JSM PRODUCTS CO. • Dept. 23-1118 Castleton Rd., Cleveland 21, OHIO

make your own *Gems* 29.50 FOB

The Gem Maker comes complete with all necessary equipment, including a super-charged diamond blade for sawing, and all wheels for grinding, shaping and polishing; also complete instructions. The complete equipment as shown, less motor and belt, for only $29.50, f.o.b. Burlington, Wisconsin. Write today for information and literature.

B & I MANUFACTURING CO.
Dept. 8 Burlington, Wis.

PROFIT from the WISDOM of the YOGIS

POWER

is the secret of success!

Banish anxiety, worry, fear and frustration! Take vitality from the air . . . cleanse mind and body of defeatist poison . . . improve voice, posture, self-confidence. Strengthen your spine and nervous system, control your emotions. With these and many more secrets mold your life into a successful pattern with new, DYNAMIC physical and psychological powers!

STUDENTS SAY: "I'm self-confident now . . . not self-conscious at all," "no longer neurotic," "calmer, happier, more energetic," "no more tension," "no more headaches or nerves," "wish I'd found this Course years ago."

YOU can start on the road to sure success at our expense. Send coupon for the first lesson, a 26-page booklet covering Deep Relaxation and Dynamic Breathing. It's yours to keep and use!

Start Your All-Around Improvement TODAY!

Send the Coupon **YOGA**

INSIGHT SCHOOL of YOGA 806 Dempster St. Evanston, Ill., Dept. PS-4

Please send me YOGA Lesson I. (No obligation.)
I enclose 25c for handling and mailing.

NAME.....
ADDRESS.....
CITY STATE

See the Greatest Show on Earth with this

GIANT ASTRONOMICAL TELESCOPE

$15.00 FULL PRICE

Delivered ready for use. Has 45X, 75X and 100 power individually mounted eyepieces with brass focusing tube plus sun projector lens for observing sun spots and solar storms. Steel telescope tube 50 in. long. Rigid 6 ft. tripod adjustable to any height. Steel forked mounting with closely machined aluminum tripod head assembly assures extra fine adjustments. This professional type instrument provides full power with clear vision at all times. See the moons of Jupiter, our own moon, planets, milky way, double stars, star clusters, etc. All for only $15.00 FOB Mattituck. Sent express. COD orders require $5.00 deposit. Satisfaction guaranteed. 200X and 400X eyepieces available at $2.00 ea.

SUFFOLK SCIENCE SERVICE
Dept. ATP-4 MATTITUCK, N. Y.

SAVE 75% ON WORK CLOTHES!

SURPLUS STOCK FROM MIDWEST SUPPLY FIRM!
Terrific values you've got to see to believe!

SHIRTS 79c
Made to sell for 2.99! Now Only 4 for $2.99

What a buy! 4 for the price of one! These shirts, though used, are washed, sterilized and ready for long, tough wear. In blue, tan or green. *Send name, address, neck size.*

PANTS to match Unbelievable Bargains! Sold for 3.95. Now only **99c**
Send waist measure and inside leg length. 4 for $3.75

COVERALLS . . . wear 'em used and save plenty! Originally 5.95. Now only . . . **$1.95**
Send chest measurement. 3 for $5.75

SHOP COATS . . . fully reconditioned. Take advantage of this rock-bottom price. *Send chest measurement.* Now only **$1.79** 3 for $5.00

SATISFACTION GUARANTEED! Your money back if you can beat these bargains anywhere! You can't lose so order TODAY for immediate delivery! Pay postman or send money with your order and save postage. $1.00 deposit on C.O.D. orders.

GALCO SALES CO. Dept. 244
7120 Harvard Ave. • Cleveland 5, Ohio

FREE FOR ASTHMA

If you suffer with attacks of Asthma and choke and gasp for breath, if restful sleep is difficult because of the struggle to breathe, don't fail to send at once to the Frontier Asthma Company for a FREE trial of the FRONTIER ASTHMA MEDICINE, a preparation for temporary symptomatic relief of paroxysms of Bronchial Asthma. No matter where you live or whether you have faith in any medicine under the sun, send today for this free trial. It will cost you nothing.
FRONTIER ASTHMA CO. 933-W FRONTIER BLDG.
462 NIAGARA ST. BUFFALO 1, N. Y.

OWN a Business

If employed, start part time. Alert dealers can gross $5 hourly profit on own service plus $3 on EACH serviceman. Clean, revive, mothproof rugs & upholstery on location. No shop needed. Services nationally advertised. Repeat customers. Easy to learn. We locally train and assist you. Quickly established. Easy terms. Send today for FREE booklet. No obligation.
DURACLEAN CO., S-184 Duraclean Bldg., Deerfield, Ill.

REAL ESTATE BE A BROKER

FREE BOOK TELLS HOW

PAYS BIG! SEND FOR FREE, BIG, ILLUSTRATED CATALOG NOW! Graduates report making substantial incomes. Start and run your own business quickly. Men, women of all ages, learn easily. Course covers Sales, Property Management, Appraising, Loans, Mortgages, and related subjects. **STUDY AT HOME** or in classrooms in leading cities. Diploma awarded. Write TODAY for free book! No obligation.
Approved for World War II and Korean Veterans
WEAVER SCHOOL OF REAL ESTATE (Est. 1936)
2020 Grand Dept. PS Kansas City, Mo.

POWER MOWERS & KITS

FREE PLANS

LOW FACTORY PRICES DIRECT TO YOU

Build your own quality mower with our LOW COST KITS. Parts, Engines. Free Plans guide you. 3 and 4 Wheel Kits, complete. Parts precision finished, ready to use. Write TODAY for Free Plans, Low Prices, Parts List and Guarantee.

3-WHEEL KIT NO. 1-800

America's Finest Power Mowers completely assembled in 3 and 4 wheel models. Belt or direct drive. 18" and 20" sizes. Nationally known make engine. Latest improved features, sturdy construction and money back guarantee fully described in color folder. Write today.
TRIANGLE MANUFACTURING CO., Dept. S-4 Fort Scott, Kansas

Give your family FREEDOM FROM FEAR OF FIRE

When fire strikes, the Edwards Home Fire Alarm can save *your life . . . and your family's!* Stands guard over your loved ones every minute of every day and night—permanently. It's automatic, electric, foolproof—easy to install. Run low cost bell wire to detectors (usually in furnace room and storage area) . . . screw detectors onto ceiling . . . and mount 5" x 7" signal unit onto wall. Connect detectors and plug in. That's all. Two UL listed detectors give you 400 sq. ft. safe coverage each (for protection in *every* room, use additional detectors at $3.50 each). At 140°, detectors set off loud alarm that gives your family fair warning—*fire warning.* Guaranteed by Edwards, maker of fire alarm systems for you and your family in schools, hospitals, industrial and office buildings . . . since 1872. For freedom from fear of fire for *your* family, buy it today from your electrical or hardware dealer, or mail coupon for literature and name of nearest distributor.

So sensitive a lighted match sets off alarm.

EDWARDS

HOME FIRE ALARM . . . $19.95

EDWARDS CO., INC., Dept. PS-4, Norwalk, Conn.
(In Canada: Address Owen Sound, Ontario)

Please send literature and name of nearest distributor.

Name_____
Address_____
City_____ State_____

MECHANICS
—EARN BIG PAY—

Industry needs skilled mechanics. GREER, leader for more than 50 years in the Trade School field, can train you quickly—You "learn by doing," using the finest equipment, under the supervision of expert technicians.

APPROVED FOR CIVILIANS ☐ OR GI'S ☐

—CHOOSE YOUR TRADE—

- ☐ DIESEL MECHANICS ..... 20 Weeks
- ☐ AUTOMOTIVE MECHANICS ..... 20 Weeks
- ☐ BODY & FENDER REPAIR ..... 16⅔ Weeks
- ☐ GAS ARC WELDING ..... 4 to 12 Weeks
- ☐ REFRIGERATION ..... 13½ Weeks
- ☐ AIR-CONDITIONING ..... 8½ Weeks
- ☐ MACHINIST TRADE ..... 30 Weeks
- ☐ ADVANCED MACHINIST (includes tool & die) ..... 32½ Weeks
- ☐ PIANO TUNING & REPAIR ..... 36 Weeks

CHOOSE YOUR ENGINEERING COURSE

- ☐ DIESEL AUTOMOTIVE ENGINEERING ..... 2 Years
- ☐ REFRIGERATION & AIR CONDITIONING ENGINEERING ..... 18 Months

Free employment help. Start your career with Greer by checking your interest above and mail coupon for complete information at no obligation.

NAME _____ AGE ____

STREET _____

TOWN _____ ZONE ____ STATE _____

Established 1902 — Over 50,000 Graduates.

GREER SHOP TRAINING
2238 S. Michigan Ave.
Chicago 16, Illinois

READY CUT HOMES

$2150 AND UP Freight paid. Save up to $1000 on production method homes. More compared with builders' prices. Anyone can assemble with simple plans furnished. Complete, including paint, hardware, roofing, glass, nails, etc. Send 25c in coin for full color catalog, 57 modern low priced homes and floor plans. Complete building plans ready for filing at low cost. Sold separately if desired. Five Easy Payment Plans including monthly payments.

INTERNATIONAL MILL & TIMBER CO., Bay City, Mich., Dept. PS45

NEW COLOR CATALOG FOR ONLY 25c

WHEELS WHEELS WHEELS

7" Disc Wheel ¾" Tire ¾" sleeve	45c ea.
8" Disc Wheel 1⅛" Tire 1" sleeve	70c ea.
7" Disc Wheel 1" Tire ½" ball bearing	80c ea.
8" Disc Wheel 1⅛" Tire ½" ball bearing	$1.00 ea.
6" Disc Wheel 1.50 semi-pneum. Tire ½" S.B.	$1.35 ea.
8" Disc Wheel 2" semi-pneum. T. ½" S.B.	$1.50 ea.
10" Disc Wheel 1.75 semi-pneum. T. ½" S.B.	$1.50 ea.
10" Disc Wheel 2.75 semi-pneum. Tire ⅝" S.B.	$3.50 ea.
12" Disc Wheel 1.75 semi-pneum. T. ½" S.B.	$1.85 ea.

Above wheel prices includes hub cap. Plus Postage. C.O.D.'s accepted.
AXLES—Sizes 5/16 in., ⅜ in., ½ in.—Cut to size—End holes drilled.

UNITED WHEEL STAMPING CO.
12131 S. PEORIA STREET PS-4 CHICAGO 43, ILLINOIS

Car TOUCH-UP KIT

FIX SCRAPES, NICKS, RUST YOURSELF—*EXPERTLY!* NEW!

Your *exact color* Dul'Pont paint *plus* Body Shop Instructions, brushes, paddles, polishing paste, etc. . . . Makes professional results easy! *For all cars* except foreign . . . Give year, make, and color. Ideal gift. MONEY-BACK GUARANTEE.

COMPLETE KIT $2.50
With both colors for 2-tones $3.75

COLOR-PAK Box 57-11, Summit, N. J.

STAMP COLLECTORS

308 DIFFERENT STAMPS 25¢

Including scarce Trieste collection; **United Nations** Issue, **Olympics**, Latest **wild animal set**—in gorgeous multi-color showing the Lynx, Bear, Chamois, Deer, etc. Stamps from riot-torn Trieste are becoming very scarce. These are only part of the big collection of 308 all different foreign stamps Cataloging $7.00 that you get for **only 25c** to introduce our approvals.

IDEAL STAMP CO., Dept. 3C, P. O. Box 64
West Farms Station, New York 60, N.Y.

Make Gardening Easy
with the amazing new *Ariens Jr.*

ROTARY TILLER...ONLY $129.75

Prepares garden without plowing, discing, harrowing or spading! Cultivates close to plants, kills weeds all season long without tedious hoeing by hand! 2 h.p. engine. "Paring Knife" tines. Tills 12" wide, up to 6" deep. Tip-toe clutch and other exclusive features which make Ariens Jr. unequalled for construction, looks, performance and price! See it soon!

Visit your dealer or write:

ARIENS COMPANY • 159 Calumet St. • Brillion, Wis.

BUY IT

WHOLESALE!

GET UP TO 40% OFF

☆ Start a Buying Service at Home. SPARETIME, GET BIG-NAME MERCHANDISE FOR SELF AND CLIENTS UP TO 40% LESS THAN REG. PRICE. SALES EASY, AS YOU CAN GIVE SIZEABLE DISCOUNTS, STILL MAKE FAT COMMISSIONS. *Post Card brings FREE Copy "The Wholesale Plan".*

FREE! "THE WHOLESALE PLAN"

American Buyers Service

631PS LINDEN AVE., BUFFALO 16, N. Y.

CALIFORNIA LAND FOR PROFIT

Good land near growing populace usually means profit for land-owners. Five million people in Los Angeles County are making rural land prices soar. With $90 down, small monthly payments, you can buy good, level acres within 60 miles of Los Angeles City Hall. Let the California rush grow dollars for you. For free map & details, write

SUNSTATE LAND COMPANY

7075-PS Hollywood Blvd., Los Angeles 28, Calif.

TIRE SALE

AT LESS THAN WHOLESALE!

SAVINGS NEVER LESS THAN 35% UP TO 60% OFF REGULAR PRICES

SEND FOR YOUR FREE CATALOG!

FACTORY FRESH **BRAND NEW TIRES**

B.F. Goodrich • Firestone

FIRST LINE "LONG MILER" 4 Ply BLACKWALL TIRES

	FULL PRICE		FULL PRICE
670 x 15	$13.32	760 x 15	$16.10
710 x 15	14.72	600 x 16	12.05

SPECIAL! WHITE WALL TIRES

	FULL PRICE		
670 x 15	16.09	710 x 15	17.76
600 x 16	14.47		

FIRST QUALITY HEAVY DUTY TRUCK TIRES

		FULL PRICE
750 x 15	6 ply	23.90
600 x 16	6 ply	16.50
650 x 16	6 ply	19.97
750 x 20	10 ply	46.67
825 x 20	10 ply	57.27
900 x 20	10 ply	71.04
1000 x 20	12 ply	96.06

DOUBLE LIFETIME GUARANTEE

All Tires Carry Mfg'rs. Full Lifetime Guarantee plus S & S own iron-clad guarantee of quality and value!

Order by Mail—send check or M.O. All prices include excise tax, sold F.O.B. Camden, N. J. Motorists, Farmers-Truck Owners, Garage men—Gas Stations—we have the most complete stock of tires anywhere! OPPORTUNITY FOR YOU to make REAL MONEY—sell to your friends, neighbors, etc. Become a part time Sales representative—Sell at a discount and make profits too! Write us today for full information!

S & S TIRE CO. HADDON AND BRADLEY AVES. CAMDEN 3, N. J.

LOCKSMITHING & KEY MAKING

COMPLETE UP-TO-DATE COURSE

How to pick locks, decode, make master-keys, repair, install, service, etc. 53 easy illustrated self-instruction lessons for every handy man, home-owner, carpenter, mechanic, hardware dealers, maintenance men, etc. Satisfaction guaranteed. Full price only **$4.95**, postpaid—or C.O.D. plus postage. Address below.

WATCH AND CLOCK REPAIRING

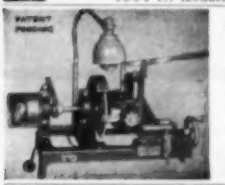
LEARN at HOME in Your Spare Time. Prepare for a happy future of prosperity and security—and get a good job Now. A fascinating, thorough self-instruction training in American and Swiss watches, clocks. Special section on alarm clock repairs. Fast-growing field. Complete **$5.95** postpaid—or C.O.D. plus postage. Satisfaction guaranteed! **NELSON-HALL CO., Dept. DV-1, 210 S. Clinton St., Chicago 6, Ill.**

PROFITABLE HOBBIES

Do **WONDERFUL** things with your spare time! Make beautiful and **UNUSUAL** items for the home, as fascinating gifts, or for **RESALE!** Build a profitable home occupation or hobby! We show you how. Make astonishing jewelry, Ceramics without a kiln, dolls, toys, puppets, figurines, Planters, Ivory, embedded plastics, etc. Send 25c for big catalog and details, refunded with first order. Write Dept. A-127.

PLASTICAST COMPANY

4804 N. Kedzie, Chicago 25, Ill.



Start a NEW BUSINESS!

or Add to your present Repair Business

SHARPEN DULL PIPE WRENCHES

PIPE TAPS & DIES

"GUM" CIRCULAR SAWS

Also MOTOR DRIVEN ROTARY HONE

Write for Information

J. C. MOORE INDUSTRIES

Box S 276, Fredonia, Pa.

Want a Government Job?

START AS HIGH AS $4205.00 A YEAR

Prepare NOW for next exams

MEN—WOMEN

Thousands of appointments being made. 36-page Book FREE. Mail Coupon Today. Sure.

Coupon

FRANKLIN INSTITUTE (Not Gov't. Controlled)
Dept. B-90, Rochester 4, N. Y.
Sirs: Rush FREE (1) 36-page book with list of U. S. Gov't. Jobs; (2) Tell me how to qualify.
Name.....Age....
Address.....

Amazing new pep, handling ease, economy for 4 WHEEL DRIVES!

WARN HUBS

STOP FRONT END DRAG

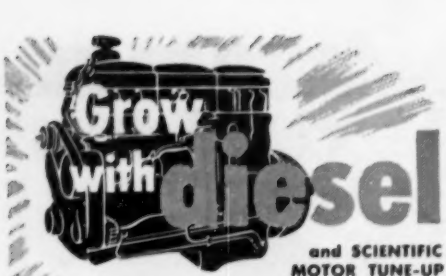
THE FRONT AXLE STANDS STILL IN 2-WHEEL DRIVE RANGE

Warn Hubs on your 4 W.D. improve performance and cut operating costs in *both* 2 and 4 wheel drive range! They disengage the front axle assembly for use in 2 wheel drive range, giving your 4 W.D. amazing pep, getaway, speed, and easy steering. They stop front wheel shimmy, reduce front end wear up to 50%, save gas and tires! And when 4 wheel drive is in use, Warn Automatic Hubs stop front axle torque, permitting high road speeds that might otherwise cause front axle breakage!

USE EITHER 2 OR 4 WHEEL DRIVE ANYTIME!

Choose the drive you need, *as you shift gears* with Warn Automatic Hubs, or by simple *manual control* with Warn Locking Hubs. Willys models are factory approved, sold exclusively by Willys dealers worldwide. Dodge and all other 4 W.Ds., at dealers or prepaid direct from WARN MFG. CO., Seattle 88, Washington, Riverton Box 6064-B6.

ASK YOUR DEALER FOR **FREE DEMONSTRATION**



and SCIENTIFIC MOTOR TUNE-UP —One of America's Fastest-Growing Big-Pay Industries!

Get ready now . . . Make a place for yourself in the mighty Diesel industry. Be there to take advantage of the opportunities ahead. The U.E.I. Plan for learning Diesel is simple, practical and is based upon the principle of learning-to-do-by-doing. Includes Auto Engine Tune-Up. You get fundamentals through spare-time home-study, followed by actual shop practice on modern Diesel engines. Experienced instructors guide you step-by-step — you learn the HOW and WHY of Diesel operation, service and maintenance. Get all the facts—mail the coupon and we'll send you a free copy of "Earning Power in Diesel." Mail coupon today!

UTILITIES ENGINEERING INSTITUTE
Dept. DM-39, (Founded 1927) Chicago 14, Ill.

UTILITIES ENGINEERING INSTITUTE, Dept. DM-39,
2521 Sheffield Ave., Chicago 14, Illinois

Please send me, without obligation, your free book, "Earning Power in Diesel."

NAME (print) ..... AGE .....
ADDRESS .....
CITY ..... Zone ..... State .....
☐ Check here for information if you are under 17

AMAZING . . . VERSATILE ARROW GUN TACKER

The most sensational tool ever devised for fastening insulation, ceiling tile, screens, cornices, linings, etc. Self-feeding, automatic action permits user to staple-tack at desired rate of speed. One-hand operation frees other hand to hold material in place. It all adds up to savings of time, money and effort. **Sold at Hardware, Building and Lumber Material Dealers**

ARROW FASTENER COMPANY, INC.
ONE JUNIUS ST. BROOKLYN 12 NEW YORK

QUICK CASH PROFITS on Imports by Mail Order!

Would you like to know about my proven plan which brings me up to 1,163 cash-in-advance, $2 orders for imports in a single day? Would you like to work this plan, too? It's just buying good imports at low foreign prices and selling them here at big profits by mail order. Full or part time. Even from your own home. No investment in merchandise. I show you everything—how to find choice imports from Amsterdam to Zanzibar—also how to export. Here's a business so big there's room for you and me and many others. Learn how you, too, may go after this big *fast cash!* Write today for FREE details. Air Mail reaches me overnight.

B. L. Mellinger, The Mellinger Co., Dept. E244
1717 Westwood, Los Angeles 24, Calif.

New Low Cost Electric Water Heater Gives You HOT WATER AUTOMATICALLY FROM YOUR PRESENT TANK!

Lektromatic changes your water heater into automatic unit. Install in 10 min without draining. Screw-in, plug-in and save $75 to $150. Clean, safe as electric light. Temp. adjusts 30 thru 180 degrees. Thread is 1" pipe size. UL approved switch-thermostat. 1250 w 110 v $19.95 (2000 w 220 v. $21.95) Send payment and save shipg. or order COD. 10 day free trial 1 yr full guarantee.

Lektromatic Mfg. Co., Dept. PS-4
852 Rogers Ave., Brooklyn 26, N. Y.

. . . Swiss or American

Unique Sweazy System starts you making repairs right away. Develops your skill step-by-step. Teaches **modern methods**... professional short cuts. Learn by **personal attendance** or spare time **home study.** Approved for veterans. **Free Sample Lesson.** No obligation. Write today!

CHICAGO SCHOOL OF WATCHMAKING
2330 Milwaukee, Dept. 445, Chicago 47, Ill.

BUILD LUGGAGE AT HOME! WE SELL YOUR PRODUCTS!

Only New Home Money-Making Plan in Years!

Make Luggage and cases for traveling, photographers, musicians, salesmen, electronics, tools, portables, 1001 other items. Also repair Luggage. No special equipment needed. BIG Profits. We supply complete instructions, materials—everything. Write for free details and Business Plan. ABARSI CASE-CRAFT, Dept. H-4, 805 W. Sunset Blvd., Los Angeles 12, Calif.

OVER $200 SAVINGS ON GAS ENGINES
BRAND NEW—WISCONSIN
FAMOUS NAME
MOTORS
25 HP VF4-4 cyl. ONLY $365.37
(list price: $576)

Complete with starter, generator and bell housing—less battery.

Payments 25% with order, balance C.O.D.

WRITE TODAY: ★

JOHN J. TRUNDE
1937 N. Hubbard St.
Milwaukee 12, Wisconsin

SHRINK SPACE

105 POWER SUPER SCOPE

There's No Better Value

FREE with your order

Star Explorer Map enables you to find any star automatically

108-page book, "Discover the Stars"

Carrying Case for Telescope

$11.95 Post Paid

Reaching for the moon? You can bring it 105 times closer with CRITERION Super-Scope. Same goes for ships, people, animals, planets, stars. Space literally shrinks away. All images erect. Telescope can also be used as powerful compound microscope Set comes ready for use: Brilliant variable 33X-65X-105X power adjustable eyepiece. 3 foot telescope, brass bound, closes to 16 inches. 4 precision lenses. Shipped complete with sturdy 5 foot hardwood folding Tripod equipped with universal mount that has 360° horizontal range, 180° vertical. Locks in any position. The price has been shrunk, too—only $11.95. Satisfaction guaranteed or money refunded. We pay all delivery charges. Send check or money order to DEPT. SPS2

CRITERION CO. 331 CHURCH ST. HARTFORD 1, CONN.

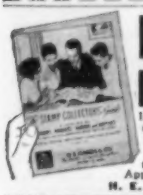
SEWS LEATHER

AND TOUGH TEXTILES LIKE A MACHINE

With SPEEDY STITCHER Automatic Sewing Awl, anyone can quickly and skillfully sew or repair anything made of LEATHER, CANVAS, NYLON, PLASTIC, or other heavy materials. Sews firm, even lock-stitches like a machine. Gets into hard-to-reach places. Specially made for heavy duty sewing on LUGGAGE, FOOTWEAR, RUGS, AWNINGS, SAILS, SADDLERY, UPHOLSTERY, OVER-ALLS, AUTO-TOPS, SPORTS GEAR, and other tough sewing jobs. Here's the handiest tool you'll ever own. Will save you many times its small cost. Comes ready for instant use . . . complete with bobbin of waxed thread and 3 different types of diamond-pointed needles. Easy-to-follow directions will make you an expert in minutes. Extra needles and waxed-thread always available. Save money: send $1.98 for postpaid delivery. If C.O.D., $1.98 plus postage. MONEY BACK GUARANTEE.

SPORTMAN'S POST
366 Madison Ave., Dept. A-223, New York 17

ONLY **1.98**



New Stamp Book FREE

Tells "How to Collect Stamps" and why you'll enjoy and profit by this fascinating hobby. Includes United States Postage Stamps complete (valuable guide and check list); U.S. & Foreign Packets; low-cost Beginner's Outfits; Clearance Sale Bargains; Special Offers; Albums, Supplies, etc. A gold mine of valuable information and money-saving prices! 64 pages; profusely illustrated; just published by world's largest stamp company. Approvals included. SEND NO MONEY! WRITE TODAY!

H. E. HARRIS & CO., 1620 Transit, BOSTON 17, MASS.

PAGE TILLERS

Makes tough jobs easy!

3 Models—1½-2½-3½ HP.

Tiller, mower, snow blow attachments easily shifted. Safe and easy to operate. Rugged steel frame, adjustable rubber tired wheels. So handy around the home or farm!

FREE CATALOG — Complete tractor line with all attachments

PAGE 1016 S. 81st St. Milwaukee, Wis.

New 1955 "Page-Boy"

Tills
Cuts Grass
Blows Snow!

★ LOW PRICED
★ EASY TERMS
★ FULLY GUARANTEED

BUILD *the New* TRANSVISION TV KIT

ONLY **$15.00** *gets you started**

Designed so that COLOR can be added

*THIS MODEST INVESTMENT gets you started on a most fascinating project — assembling the new "E" type Transvision TV Kit in easy stages. For $15 you get PACKAGE #1 (standard first package for all new "E" kits). This package gives you the BASIC CHASSIS and required first-stage TV COMPONENTS, with complete instructions. When ready, you order the *next* stage (pkg. #2), etc.

YOU PROFIT 3 WAYS:

1. **Learn TV** the practical way — by doing.
   No previous technical knowledge is required.
2. **Save up to 50%**
3. **Prepare for COLOR TV**

FREE CATALOG

Shows 8 Great TV Kits:

EXCLUSIVE: Only Transvision TV Kits are adaptable to UHF. Ideal for FRINGE AREAS. No Previous Technical Knowledge required. Write now!

TRANSVISION
THE OLDEST NAME IN TV KITS
NEW ROCHELLE, N. Y.

MAIL THIS COUPON TODAY

Educational Director
TRANSVISION, INC., NEW ROCHELLE, N. Y. Dept. PS-4

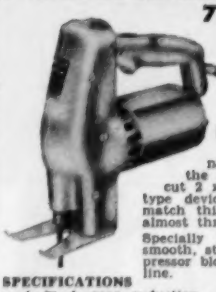
☐ I'm enclosing $ _____ deposit. Send standard kit PACKAGE #1, with all Instruction Material. Balance C.O.D.

☐ Send FREE copy of your new TV Kit Catalog.

Name _____
Address _____
City _____ State _____

THE NEW DALTON Model D-500 ELECTRIC

PORTABLE JIG SAW



7 SAWS IN ONE!

does the work of a RIP . . . CROSS CUT . . . COPING . . . JIG . . . SCROLL . . . BAND and KEYHOLE SAW

CUTS ANY MATERIAL!

SAWS ANY SHAPE!

RIPS and CROSS CUTS 2 x 4's

Makes fast, smooth cuts . . . no jumping or chattering. Has the capacity to rip and cross cut 2 x 4's. The only other similar type device on the market that can match this amazing performance costs almost three times as much!

Specially built Dayton motor assures smooth, steady cutting. A built-in compressor blows sawdust away from guide line.

SPECIFICATIONS

• 4 to 1 gear reduction. • All gears hardened steel. • Motor exposed for cool running. • Oilite bronze bearings. • Air is pumped from top down through the center section, cooling unit as well as blowing sawdust from line.

IT CUTS wood — plastics — metals — composition boards — hard rubber and others.

IT SAWS circles — curves — straight lines — intricate designs.

Complete with 5 different blades

$48.00

SHIPPED ON APPROVAL

NO MONEY WITH ORDER — NO C.O.D.

Try it ten days before you buy. If completely satisfied then send $15.00 and pay balance at rate of $11.00 per month for 3 months — No Interest or Finance Charges Added. If not completely satisfied, return to us, no explanation necessary.

KAPNER HARDWARE, INC.
Dept. A-133, 2348 Second Ave., N. Y. 29, N. Y.

Please rush one D-500 Jig Saw. I agree to pay $15.00 within 10 days after receipt and $11 per month thereafter.

Name _____

Address _____

City _____ Zone ____ State _____

KADET- 4-WHEEL TRACTOR

LOW IN COST-HIGH IN QUALITY

COMPACT IN SIZE - A POWERHOUSE IN PERFORMANCE

ONLY $275.00

Ride while you work with the new and versatile KADET.

Write today to Dept. B for complete information

- Husky 3 H.P. Clinton Engine
- Convenient Recoil Starter
- 2 Forward — 2 Reverse Speeds
- Heavy Duty Traction Tires
- Compact — Easy to Handle
- Automotive — Type Steering

This rugged, versatile tractor is ideal for farms, estates, schools, nurseries, institutions, parks, etc. Tackles every tough chore on the farm. 12 quick-hitch attachments available, including Snow Plow, Sickle Mower, Gang Mowers, Trailer, Turning Plow, etc.

NATIONAL FARM EQUIPMENT CO., INC.
142 GREENE STREET • NEW YORK 12, N. Y.

WOODWORKING

LEARN The Easy Way!

Low Cost Home Craft Courses Now Available

Make money. Become a skilled woodworker. Interstate's new woodworking course tells and shows how to turn out hundreds of professionally constructed and finished wood projects with hand and power tools. Twenty-two profusely illustrated manuals. Over 1,000 pages. Over 75 projects. Written by expert instructors. The *only* complete course available today! Get full information without obligation...today.

Write for FREE Booklet

INTERSTATE TRAINING SERVICE
SCHOOL OF WOODWORKING
DEPT. F-2-D, PORTLAND 13, OREGON

RUPTURED

BE *FREE* FROM TRUSS SLAVERY

NOW there is a new modern **Non-Surgical** treatment that permanently corrects rupture. These **Non-Surgical** treatments are so certain, that a Lifetime Certificate of Assurance is given. Write today for our New FREE Book that gives facts that may save you painful and expensive surgery, and tells **how non-surgically** you may again work, live, play and love and enjoy life in the manner you desire. There is no obligation.

Excelsior Hernia Clinic Dept. 3705 Excelsior Springs, Mo.

$210.00 and MORE IN A WEEK YOURS!

New Refrigerator Defroster Sells Itself on Sure-Fire FREE TRIAL!

NOTHING ELSE LIKE IT! 8 out of ten housewives buy amazing D-Frost-O-Matic after daring FREE TRIAL. Pocket $15.00, $20.00 and more in few hours full or spare time, up to $210.00 in a week!

FREE! RUSH POSTCARD now for big-profit facts, sure-fire FREE TRIAL Plan. Everything free, no obligation. Write TODAY!

D-FROST-O-MATIC, 173 W. Madison, Dept.G-14, Chicago 2, Ill.

FREE BOOKLET

HOW I MAKE OVER $125 WEEKLY

SELLING BOOKS BY MAIL!

WORK AT HOME

YES, I AVERAGE $125.00 WEEKLY, SELLING BOOKS BY MAIL. YOU CAN SELL THE SAME BOOKS I DO! YOU CAN START IN YOUR SPARE TIME. NO STOCK TO CARRY. *ONLY SMALL INVESTMENT NEEDED.*

WRITE *NOW* TO PAUL COOPER

248-PS Taunton, Buffalo, N. Y.

METAL WORKERS

4 TOOLS IN 1

"4 in 1" **Punches, Forms, Shears, Rivets** metals up to 16 ga. 1" width, 5 sizes round punches included. Model #10—$9.95, postpaid. Hex, square, rectangular punches—40c each. **Brakes**—up to 90° Bends—16 ga. 12" and 18" widths. Unique feature permits forming of Boxes, Trays, Covers with up to 1" flange edge. 12" Model B12—$9.95. 18" Model B18—$14.95, F.O.B. Buffalo. **Notching & Nibbling Units**—Model N2 "V" Notch 1" x 1" and Model N2N 1" x 3/4"—$9.95 each., F.O.B., Buffalo. **Threading Die**—Thread rod stock for 1/8", 5/32" and 3/16" standard nuts $1.00 postpaid. **Wholesale Catalog**—82 pages of name brand items at dealer prices—50c.

ALBERT J. TATU, INC., 85 Columbia Dr.
Dept. PS-4, Williamsville 21, N. Y.

TELEPHONES

Desk Stand Style

Slightly used but in excellent condition

Many Valuable Uses

Inter-House Phones — House to Barn, etc.
Loud Speakers — Microphones
Educational Purposes, Toys, etc.

Come complete, ready to use with wiring diagrams included. Two complete for only $5.00

$2.75 Postpaid in U.S.A.

TELEPHONE LAMP KIT—with illustrated instructions for making Desk Telephone Lamp including all parts (harp, nipples, push switch, cord, plug, etc.) . . . . $6.50 Ppd. (Shade is not included).

MICROPHONE, Dept. X-2104, 1760 W. Lunt Ave., Chicago 26, Ill.

PIPE SMOKERS!

Get this Special PARK LANE PIPE and 2 Pouches of EDGEWORTH

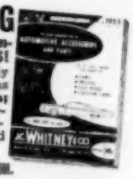
A modern air-cooled pipe! Aluminum stem, imported briar bowl! At dealers or from Park Lane, Larus & Brother Company, Inc., Richmond, Virginia.

Only $1.50

NEW! Giant **AUTOMOTIVE CATALOG**

1955 Edition! Everything for car, truck, custom-styled car, hot rod . . . at LOWEST PRICES!

Save up to 50% on all parts, accessories! Only complete automotive buying guide...50,000 items ...148 pages! Thousands of **hard-to-find parts;** equipment, parts for 1920 to 1955 models; **Hollywood accessories** never before offered; **hi-speed parts.** Send your name and address and 25c (refundable with first $5.00 order) to:



J. C. Whitney & Co., 1917 Archer, Dept. T-4, Chicago 16, Ill.

PORTABLE TILLER

PORTA-SPADE

ONLY 35 POUNDS

Gasoline or Electric

Sold by **UNIVATOR** SEE YOUR DEALER OR WRITE

UNIVATOR, INC.

2030-43 CENTER STREET, BERKELEY, CALIFORNIA

MAGNETS

ASSORTED MAGNETS with big list of handy uses.....**8 for $1**
POWERFUL POCKET MAGNET ideal for testing metals.....**$1**
RETRIEVING MAGNET pulls tools, etc., from tank or lake **$4**
HOT PAD MAGNETS to insert in your own hot pads.....**8 for $1**
BULLETIN BOARD MAGNETS to "pin-up" memos, etc.....**8 for $1**
SLENDER MAGNETS remove chips from drill holes.....**2 for $1**
Instructions and booklet with order . . . 100% Guarantee . . . Postpaid

PARK MAGNET CO., 1557 GREENBAY RD., DEPT. PS-4, HIGHLAND PK., ILL.

50X POCKET MICROSCOPE

so it magnifies the total surface area of what you view **2500 times!** Yet, it's only 2½"x3¼" in size including its upright, adjustable stand. Made in **Germany** by master optical craftsmen. Weighs less than 3 ounces—carry in your pocket! Now beginners, students and adults can thrillingly explore the world of science, study plant life, the mysteries of inorganic matter, etc. See the wonders of a single drop of blood. Opens new worlds for you. Three laboratory slides for interchangeable viewing included. Low cost labor enables us to offer it with easy-to-follow instructions, for only $3.95! **10 DAY NO RISK TRIAL.** Return for full refund if not satisfied.

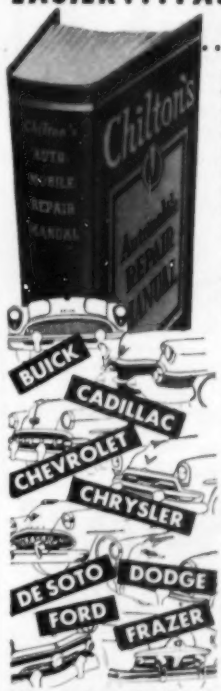
$3.95

SEND NO MONEY

Simply pay postman plus C.O.D. charges on delivery. Cash orders shipped postpaid. UNITED IMPORTING CO., Dept. POM-301, 9043 S. Western, Chicago 20.

Fix Cars!

EASIER . . . FASTER . . . BETTER



. . any make, model, part

Using this giant 4¾-pound Chilton "ALL CARS" repair manual is like having 13 of the world's leading service experts standing by your side, telling you what to do and exactly how to do it. Even beginners who have never repaired cars before can handle practically any job with this big manual to guide them. It isn't a "study" book. You just look up the make, model and part you want to fix. Every step is so clearly explained it's next to impossible to go wrong.

BY THE WORLD'S BIGGEST AUTOMOTIVE PUBLISHERS

Ask the men who know! You'll find the Chilton All Cars Manual in almost every auto shop . . . and widely used in schools, Army Navy training etc. for guiding beginners. From simple tune-ups to complete engine overhauls . . . from overdrives to automatic transmissions, it gets right down to brass tacks in helping you handle every job fast, easy and right. Published and revised each year by Chilton, publishers of Motor Age, Automotive Industries and many others. **It's the book the experts use . . . written so you can understand every word even without previous experience!** Send coupon for 10-day free trial. You be the judge!

New, enlarged edition
Covers every model of these 20 makes since 1940!
Weighs 4¾ pounds.
Has 864 big pages . . .
58 troubleshooting charts
353 "Quick Check" data tables
2532 "How-to-fix-it" pictures
. . . and thousands upon thousands of parts and service specifications.

PRACTICE 10 DAYS FREE!

The Chilton Co., Dept. PS-45
5605 Chestnut St., Philadelphia 39, Pa.

Send the 864-page Chilton **"ALL CARS" REPAIR MANUAL** (price $6.95) for 10-day **FREE EXAMINATION.** If I like it, I will promptly remit $1.95 (plus 35c postage); then send **$2.50** monthly for 2 months. Otherwise, I will return manual postpaid in 10 days and owe nothing.

(**OUTSIDE U.S.A.**—Cash only, price **$7.95.** Same 10 day return privilege with money refunded.)

Name _____

Address _____

City, Zone, State _____

MAKE IT AT HOME WITH HOMASOTE PANELS

...make it easier
...make it for less!

Town and Country Carport

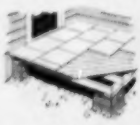
Want to build things that are really *worth building*—and do it *without blueprints?*

Our Simplified Easi-Bild* Patterns and "Make-it-at-Home" folders give full instructions—including complete materials list—for making dozens of items such as here pictured—even a new attic room or a lily pool. You build primarily with weatherproof, crackproof Homasote insulating-building board . . . available (throughout the U.S. and Canada) in many sizes, thicknesses and densities. Homasote works easier than wood—takes any wallpaper, paint or stain.

Hutch Cabinet

For patterns or folders—mail coupon.

*T. M. Reg. Easi-Bild Pattern Company



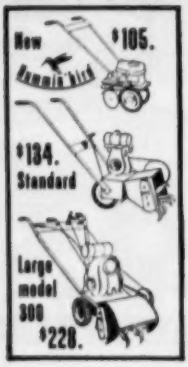
2' x 2' flooring

18 new ideas

HOMASOTE CO.
Dept. D-7, Trenton 3, N. J.

I enclose $ ..... for patterns or literature as checked:
☐ 3 Make-it-at-Home folders (10¢)
☐ Town & Country Carport #273 ($1.00)
☐ Hutch Cabinet #270 (75¢) ☐ Homasote Boards folder (10¢)
NAME .....
ADDRESS .....
CITY ..... ZONE ..... STATE .....
My lumber dealer is: .....

ROTO-HOE OFFERS 3 GREAT LINES OF POWER EQUIPMENT



Whatever your need, you can afford one of the models in the 1955 ROTO-HOE line. Complete rotary tillers from $105. to $228., all with low cost year 'round use attachments.

FREE CATALOG

New, in beautiful full color; sent on request, along with nearby dealer's name. Write today; learn how much easier gardening and lawn care can be with ROTO-HOE.

START YOUR OWN BUSINESS

If you're handy with tools, you may be able to start a profitable part or full-time business selling and servicing ROTO-HOEs. Write today for details.

ROTO HOE & Sprayer Co.
BOX 18, NEWBURY, OHIO

America's Leading Manufacturer of Lawn & Garden Equipment

EARN BIG MONEY
BE YOUR OWN BOSS • GET A BETTER JOB
IN CUSTOM FURNITURE **UPHOLSTERY**

You Can Earn While You Learn

AT HOME, earn right off, with easy, Upholstery Trades School Course. Pay for training with sparetime earnings while learning custom furniture upholstery; reupholstery, furniture finishing, repairs; slipcover, window cornice and drapery making.

Course includes FREE—ALL tools, frames, materials and fabrics to make beautiful upholstered furniture and slipcovers, yours to keep or sell.

FREE Illustrated Book, "Your New Way to a Successful Career", with sample lesson tells you how. WRITE TODAY! Training in N.Y. School also available.

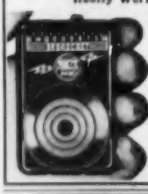
PauldeVita, former Auto Mechanic says: "Doubled my income—thanks to UTS Training".

APPROVED FOR KOREAN VETERANS

UPHOLSTERY TRADES SCHOOL,
Dept. DD-1607 721 Broadway, N. Y. 3

AMAZING NEW POCKET SIZE RADIO

Really Works—Small as a Pack of Cigarettes!



FITS IN ANY POCKET OR PURSE—GETS LOCAL RADIO STATIONS WITH CLEAR BELL-LIKE TONE—NO STATIC OR INTERFERENCE! NEEDS NO TUBES, BATTERIES OR COMPLICATED HOOKUPS! NO AC PLUG IN! Nothing to wear out. Thousands of users—many report years of service. Uses new crystal diode and HI-Q coil. SELF-CONTAINED SPEAKER PHONE. Just the tiny radio to take with you ANYWHERE YOU GO—ON TRIPS, VISITING, ETC.—for real fun and enjoyment—ANYTIME. **SEND ONLY $1.00** (bill, ck., mo.) and pay postman $3.99 C.O.D. postage or send $4.99 for p.p. delivery. COMPLETE READY TO LISTEN.
MIDWAY CO., Dept. PPS-4, Kearney, Nebr.

ADDRESS POSTCARDS AT HOME!!
write BOX 14, BELMONT, MASS.

When Writing to Advertisers Please Mention Popular Science

Free Book on Arthritis And Rheumatism

HOW TO AVOID CRIPPLING DEFORMITIES

Explains why drugs and medicines give only temporary relief and fail to remove the causes; tells all about a specialized non-surgical, non-medical treatment which has proven successful for the past 36 years. Write for this 44-page FREE BOOK today.

Ball Clinic Dept. 36 **Excelsior Springs, Mo.**

BUILD YOUR OWN POCKET-SIZE
GEIGER COUNTER
AT A BIG SAVINGS

Fun, educational, simple-to-assemble, and it really works. Get started today . . . order this complete "Do it Yourself Kit," with diagram and parts listed as follows: .05 mfd., 1,000 volt Condenser; .03 mfd., 400 volt Condenser; 10 megohms, ½ watt; S.P.S.T. Push-button Switch; S.P.S.T. Slide or Toggle Switch; Output Transformer—8000 to 3 ohms (Thorardson TS-24S49); CK1026 Geiger Tube; 3S4 Vacuum Tube; 22.5 V. Hearing Aid Battery; 2-C-Size Flashlight Cells; Earphone; Sheet Aluminum; bolts, nuts, lugs, and washers; ¼" fiber or plastic block; No. 16 bare wire.

COMPLETE KIT....$15.00 ppd.

Enclose Full Amount with Order • No C.O.D.'s Please

C & H SALES CO 2176 E. Colorado Pasadena 8, Calif.

Non-marking Oil Resistant crepe soles and heels

Rest your feet as you work! Full cushion insole is soft, resilient, gives snug support, even as you work! Special features: built in steel shank—smooth, brown, genuine cowhide leather uppers. Built for men whose feet take a beating. See them soon.

Ask for

STAR BRAND

Cush-N-Bilt

Work Shoes

For nearest dealer write:

ROBERTS, JOHNSON & RAND

Div. of International Shoe Co., St. Louis 3, Mo.

$5.95 YOU can ELECTROPLATE SILVER, CHROME, COPPER

Just Like the Professionals

SAVE MONEY • MAKE MONEY

NOW you can quickly plate your own jewelry, silverware, auto trim, etc., with the **new**, easy-to-use combination JNT DIP-COTER (for bath-plating rings, spoons, and numerous small articles) and JNT APPL-I-COTER (for brush-plating bathroom faucets, auto bumpers, and larger articles). Permanent — won't brush or wash off. A thousand uses — touch up worn spots or completely plate items. Operates on mild current of two penlite batteries. Quickly builds a thicker plate with each application. Order your combination kit today! Specify Silver, Met-L-Cote (for chrome-like surface), or Copper. **Only $5.95.** At your hardware or hobby dealer or send check or money order to Pennant Mfg. Co., Dept. 84, Box 100, Madison Sq. St. N. Y. 10, N. Y.

MENDS MOST ANYTHING

"HOLDS LIKE IRON"

Used by fine furniture makers. Ideal for home and office. In ¾ oz. or 2½ oz. sizes.

DOUBLE YOUR PAY! LEARN

DRAFTING

IN SPARE TIME—AT HOME

"MY INCOME JUMPED FROM $350 UP TO $820 PER MONTH" Says G. T. WISEMAN

"My first position after I completed the C. E. I. homestudy course on Engineering Drafting more than doubled my pay. I highly recommend this valuable, easy course to anyone interested in getting ahead in life."

GET THIS SET OF INSTRUMENTS AT NO EXTRA COST!

APPROVED FOR VETERANS

YES, SEND **FREE** SUCCESS BOOK

CLEVELAND ENGINEERING INSTITUTE
Extension Division PS-4E
6300 Euclid Ave., Cleveland 3, Ohio

( ) Mechanical ( ) Aeronautical

VETS: give date of discharge.....

NAME .....

ADDRESS .....

CITY ..... STATE .....

CLEVELAND ENGINEERING INSTITUTE

Floor Surfacing Contractors NEEDED!

★ BIG PAY

★ FULL or PART TIME

★ AGE No Barrier

★ Minimum Investment

BE YOUR OWN BOSS

Highly respected profession offers you unusual opportunity to *be your own boss!* Thousands of men from 18 to 80 have found financial security and happiness in this phase of building and remodeling. Pay scale is high—many earn $50 a day and more. Men even with physical handicaps enjoy this pleasant year 'round work. No schooling or special skill required. Only small investment in sander gets you started. Send for booklet "Opportunities in Floor Surfacing", enclosing 25c in coin or stamps to cover handling.

SEND..

AMERICAN
FLOOR SURFACING MACHINE CO.
532 So. St. Clair St., Toledo 3, O.

Hanging Paper?

use REX for a perfect job!

Use the paste professionals prefer—for a beautiful wallpaper job every time. Rex works easily, saves time and labor—sticks to stay. Complete, simple instructions on every bag!

To take off old wallpaper... try Rex Wallpaper Remover. Just brush or spray it on—and stubborn paper peels off in a hurry!

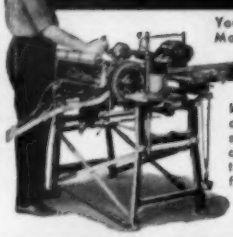
To prepare the wall... Rex Wall Size makes a perfect surface for paper, paint or kalsomine. Will not chip, peel or crack!

At Paint, Hardware, Wallpaper Stores

PATENT CEREALS CO., GENEVA, N. Y.

Extra money for you with

IDEAL LAWNMOWER SHARPENER



You can earn extra money with the Model 300 Ideal Lawnmower Sharpener. No experience needed, easy to operate. Grinds and reconditions reel and bed knife. Customer satisfaction guarantees repeat business. Complete shop in one machine. Spare time or full time, it's the IDEAL way to extra profits for you. Write for catalog today.

THE FATE-ROOT-HEATH CO.
Dept. PS-4, Plymouth, Ohio

GROW

HERBS & SPICES

AT HOME

MEN! WOMEN! Earn Spare Time $$

Successful home grower tells you how he started growing Herbs as hobby **IN SMALL APARTMENT** and developed a fine, nation-wide business. Learn how to make 101 profitable items at home. **BIG-PROFIT** orders come from neighbors, stores, gift shops, many business firms—**ALSO MAIL ORDERS.** Millions of $$ worth used yearly in foods, drinks, cosmetics, perfumes, medicines, etc. **EASY TO GROW** indoors or out. Few plants in kitchen window supply household needs. **HERBS MULTIPLY RAPIDLY**—half-dozen plants soon become hundreds. No big overhead. **SEND NO MONEY.** Instructions including **PLANS FOR 25 WAYS TO MAKE MONEY AT HOME** with Herbs **AND LIVING HERB PLANTS** sent for no-risk examination. **FREE**—full details.

WRITE NOW! WORLD OF HERBS, Dept. 54, 601 S. Vermont, Los Angeles 5, Calif.

BUILD YOUR OWN ROOM AIR CONDITIONER

Save more than $100. with the KOOL-KIT. Contains all parts necessary, including motors and complete instructions for easy assembly. Price $149.95 shipped freight collect. Money back guarantee. Literature on request.

KOOL-KIT INC. P.O. Box 4055 Alexandria, Va.

Build your own *JET ENGINE!*

Order these plans today

1. JET PROPELLED BICYCLE. Assemble your own. Photo and instructions $1.00.
2. HOW TO MAKE EXPERIMENTAL JET ENGINES. Seven sheets drawings with information and instructions $2.95.
3. BOTH OF ABOVE in one order $3.75.

SEND NO MONEY. Order both at once $3.75 C.O.D. in USA plus c.o.d. postage. Send check or Money Order and we pay postage. Get other information too. Rush Order.

J. HOUSTON MAUPIN, Dept. 66, Tipp City, Ohio

NEW ELECTRONIC GARAGE DOOR OPERATOR

Now you can install your own electronic garage door operator—and save over half the cost. The Bellford-Matic is precision engineered with a ½ h.p. Westinghouse motor, Cutler-Hammer relays and other top quality components and is sold on a money-back guarantee. Post Controlled Unit—Complete assembly kit $69.00. Post Controlled Unit—Factory assembled, ready to install $89.00. Radio Controlled Unit—Factory assembled includes transmitter, receiver, operator and controls, ready to install $139.00. All prices F.O.B. Factory. Write for complete folder.

Dealer inquiries invited

BELLFORD-MATIC, INC.
Dept. P, Maurice Ave., Cleveland 27, Ohio

If Ruptured

For lasting relief your rupture must BE HELD BACK DAY and NIGHT.

Consult Your Doctor.

Entirely different

SOFT, FLEXIBLE, and fits neat as a glove. The famous Miller saves you TIME, MONEY, DISAPPOINTMENT. Write for my FREE booklet today.

FRED B. MILLER Manufacturer
Dept. P-A Hagerstown, Maryland

ALSO "ESHELMAN" CHILD's 2 Passenger Motor Car

Eshelman Cars *Commended by Parents' Magazine*

Free Catalog

ESHELMAN ADULT SPORT CAR Model HP

1/5 THE COST OF ANY OTHER AUTO

70 Miles Per Gal. Gas.
35 Miles Per Hour.
Write for Catalog.

Pat. Pend.

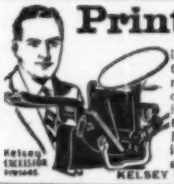
ESHELMAN
Dept. MC-44
109 Light St., Balto. 2, Md. 333 N. Michigan Ave., Chicago 1, Ill. 6087 Sunset Blvd., Los Angeles 28, Calif.

WHILE THEY LAST! 107 "IRON CURTAIN" Stamps

Sensational Stalin stamp *plus* 106 others, all different, from Russia, Bulgaria, Romania, Czechoslovakia, Ukraine, etc. Hard-to-get, smuggled from behind the infamous Iron Curtain! Guaranteed worth nearly $2.50 at Standard Catalog prices! ALSO valuable booklet "How to Recognize Rare Stamps" and other fascinating offers. All for only 10c covering postage and handling. Send *Today!*

KENMORE STAMP CO., Milford H-602, N.H.

Print Your Own



Cards, Stationery, Advertising, labels, circulars, photo and movie titles, church work, tags, etc. Save money. Sold direct from factory only. Raised printing like engraving, too. **Print for Others, Good Profit.** Have a home print shop. Easy rules supplied. Pays for itself in a short time. Write for free catalog of outfits and all details.

KELSEY PRESSES, N-33, Meriden, Conn.

URANIUM GEIGER KIT

Build your own professional model with meter, best sensitivity and easy to follow instructions. Uses two tube printed circuit having all the features of instruments three times as expensive. Three position range switch, phones, meter and flashing neon lite give indication of uranium. Kit comes complete with all necessary parts, ore sample and detailed instructions. This educational, money saving kit is fully guaranteed and its compact size 4½" x 8" x 4" is best for field use. Order now! Free information!

49.50

SIERRA SCIENTIFIC CO.
5415 YORK DEPT. 2 LOS ANGELES 42, CALIFORNIA

FREE 1955 ALLIED TV & RADIO CATALOG

THE COMPLETE ELECTRONIC SUPPLY GUIDE

308 VALUE-PACKED PAGES

Save on Everything in Electronics

WORLD'S LARGEST STOCKS

Everything for Experimenters, Builders, Amateurs, Servicemen, Engineers and Hi-Fi Specialists

Send for ALLIED's big 308-page value-packed buying guide to *everything* in TV, Radio and Electronics! Largest selections of custom TV chassis, antennas and accessories; FM and AM tuners; High Fidelity systems and components; recorders and phono equipment; Amateur supplies; test instruments; builders' kits; industrial electronic supplies —*plus* the world's largest stocks of electronic parts, tubes, tools and books. Save on everything in Electronics —send today for your FREE 1955 ALLIED Catalog.

ultra-modern facilities to SERVE YOU BEST

Send for FREE Catalog

ALLIED RADIO

ALLIED RADIO CORP., Dept. 7-D-5
100 N. Western Ave., Chicago 80, Ill.

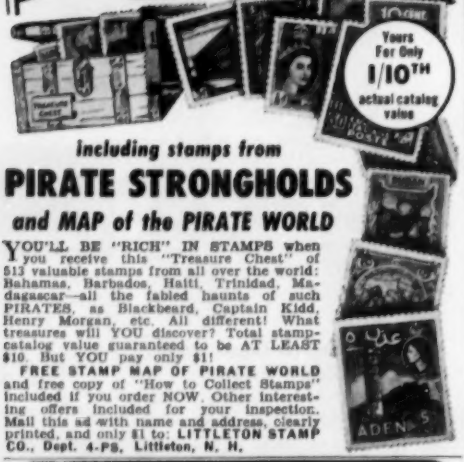
☐ Rush FREE 1955 ALLIED 308-Page Catalog

*Name*_____

*Address*_____

*City*_____ *Zone*____ *State*_____

Treasure Chest OF 513 PRIZED STAMPS



including stamps from

PIRATE STRONGHOLDS

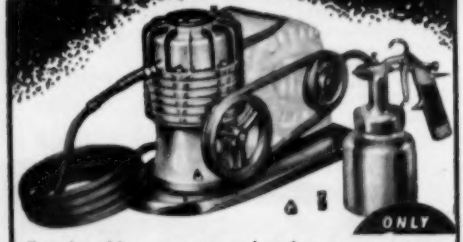
and MAP of the PIRATE WORLD

YOU'LL BE "RICH" IN STAMPS when you receive this "Treasure Chest" of 513 valuable stamps from all over the world: Bahamas, Barbados, Haiti, Trinidad, Madagascar—all the fabled haunts of such PIRATES, as Blackbeard, Captain Kidd, Henry Morgan, etc. All different! What treasures will YOU discover? Total stamp-catalog value guaranteed to be AT LEAST $10. But YOU pay only $1!

FREE STAMP MAP OF PIRATE WORLD and free copy of "How to Collect Stamps" included if you order NOW. Other interesting offers included for your inspection. Mail this ad with name and address, clearly printed, and only $1 to: **LITTLETON STAMP CO., Dept. 4-PB, Littleton, N. H.**

The easy way to paint!

Speedy Sprayer



ONLY **$36.50** Less motor

Favorite of home owners and craftsmen for 20 years! SPEEDY SPRAYER gives your work that professional paint finish everyone admires. Sprays paint, enamel, varnish, lacquer, etc. . . . 4 to 7 times faster than hand brushing! Lightweight, portable, uses any ¼ H.P. motor. Improved diaphragm principle assures clean, oil-free air. You'll find dozens of time and money saving uses for SPEEDY SPRAYER, including spraying insecticides 2-4-D and DDT. Complete outfit, without motor, only $36.50

At leading hardware, lumber, and auto supply dealers.
FREE—*write for handy booklet "How to Spray."*

W. R. BROWN CORPORATION
2637 N. Normandy Ave. • Chicago 35, Ill.

INSURED TIRE SERVICE
POPULAR BRANDS

SPECIAL! Deduct 10% on orders for Two or More used tires

FREE INSURANCE POLICY given with each used tire sold. We guarantee the amount of service you pay for.

NOWHERE CAN SUCH QUALITY BE FOUND AT SUCH LOW PRICE!

YOU CAN'T LOSE!!

Super Quality — Rugged Performance — 15 Months Insured Service

600x16	$3.45	670x15	$3.95	700x16		$4.45	760x16	$4.75
650x15	3.85	670x16	4.05	710x15		4.35	820x15	4.95
550x16	4.25	700x15	3.95	760x15		4.45	550x17	4.65

Supreme Quality — Nothing Finer — 30 Months Insured Service

600x16		$5.25	475x19		$5.45	700x15	6	$10.45	700x20	$12.50
600x16	6	6.75	640x15		4.85	750x16	6	15.95	750x20	6 15.50
650x16		5.75	670x15		5.35	700x17		11.95	750x20	10 17.50
650x16	6	7.25	710x15		5.45	750x17		16.45	825x20	21.50
700x16		6.35	760x15		5.95	750x15		10.95	900x20	19.95
750x16	6	8.45	800x15		6.35	30x5		11.25	1000x20	20.45
550x18		~.95	820x15		6.35	600x20		10.95	1100x20	21.25
550x17		4.75	550x15		5.35	650x20		11.75	1000x22	21.95
650x15		5.25	670x16		9.15	32x6	6	11.95	1100x22	22.75
700x15		5.35	700x16	6	10.25	32x6	10	12.75	1100x24	25.95

Whitewalls $1.00 extra

MIDLAND TIRE SALES

Speedy shipments on Mail Orders. F.O.B. Chicago. Insurance Policy sent with each order. Deduct 10% on orders for 2 or more used tires. Send CHECK or MONEY ORDER. No COD's.
3701 S. Normal, Dept. SS-30, Chicago 9, Ill.

A MILLION THRILLS!
High Power
BINOCULARS
30 DAY FREE TRIAL
Finest Precision Optics
Money Back Guarantee
Easy Pay Plan
Free! Catalog & Book "How to Select Binoculars"
Dept. P4 43 E. Green Pasadena, Calif.

MEN WANTED

Earn $100 Per Week and up
AUTO DIESEL MECHANICS

Master a trade with a future—learn Auto-Diesel mechanics in our shops. You learn with tools on real equipment. Earn while you learn. Many of our graduates earn $100 per week and up. No previous experience necessary. Day and night courses. Approved for veterans. Write for free bulletin.

NASHVILLE AUTO-DIESEL COLLEGE
226 7th Ave., N., Dept. 41 Nashville 3, Tenn.

Send for FREE BOOKLET

LEARN LOCKSMITHING

Learn this fascinating, profitable trade from experts in your spare time at home!
Age or physical handicap no disadvantage. Year around, steady income. Full or part time. Practical, illustrated lessons. You can make money even while learning! All materials and special tools supplied without extra charge.

LOCKSMITHING INSTITUTE, Dept. PS-64
15 PARK AVENUE RUTHERFORD, N. J.
Lic. by N. J. State Board of Education
Approved for Veterans

YOURS FREE!

VUER-PROJECTOR
& Full Color Slide Kit—Authentic $4.95 Value!

If You're Interested In

BREEDING TROPICAL FISH

For Profit & Pleasure

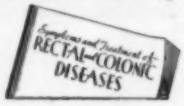
This handsome, precision-viewing instrument and color slides are yours FREE—just for showing your *interest* in Tropical Fish Breeding! See gorgeous BETTAS, colorful TETRAS, exotic ANGEL FISH, etc., in the vibrant beauty of full color! Convince yourself Tropical Fish Breeding *is* the *profitable, easy-to-start* home business for you! Breed them in your living room, spare-room, *anywhere. Success is assured because we'll buy every fish you produce!* No experience or costly equipment needed. Start spare-time, on a "shoe-string"... build a $10,000 home business! Investigate!

Write today for FREE details on "Profit-Proven" Success Plan & Vuer! (If under 17, ask for plan A.)

TROPICAL FISH BREEDERS OF AMERICA
Dept. C-4
Los Angeles 61, Calif.

When PILE PAIN Won't Let Up

Send for this FREE BOOK



Then you'll know why ointments—salves—"home remedies," etc., so seldom give real or lasting help for piles, fistula, colon and rectal troubles. Find out what you really should do, how 75,000 others have been helped, under clinic plan that carries an actual written guarantee.

Write, today, for FREE Book
"RECTAL AND COLON DISEASES"

Thornton Minor Hospital, Suite 449
911 E. Linwood Kansas City 9, Mo.

SENSATIONAL NEW
BENJAMIN SUPER CO_2 ROCKET GAS PISTOL with 2 STAGE JET SHOOTING POWER **$15.00**

HARD HITTING—ACCURATE—ECONOMICAL
SAFE—NON TOXIC—CONVENIENT—PRACTICAL.

Easy to operate. No pumping—No spring recoil. Uses popular standard size Soda Cartridges. Cal. .22 Benjamin H-C Pellets and Darts. For target and small game **FREE FOLDER.**

Benjamin CO_2 Carbine Rifle $16.50

BENJAMIN AIR RIFLE CO., 852 BARRY ST., ST. LOUIS 4, MO., U. S. A.

In the shop

For best results—you can **always** depend on Wilhold White Glue. Damp-proof! Harmless! Invisible when dry. In plastic applicators.

At your hardware or building supply store

15¢ WILHOLD GLUE 49¢

WILHOLD PRODUCTS CO., Los Angeles 31 • Chicago 44

OIL FILTER REFILLS . . . 10c

Here's News! Ordinary toilet paper makes an ideal oil filter. Laboratory tests prove it cleans oil faster and better than popular makes of filter elements. All you need is a simple set of Retlif Adapter Plates . . . and you can start using toilet paper rolls (costing about 10c) in your present oil filter. For proof and descriptive literature, send name and address to:

RETLIF CORP., Dept. 146, 915 No. Highland Ave., Los Angeles 38, Calif.

DOG BONE 10-WAY WRENCH 59¢

One Tool that can handle a million and one jobs effortlessly for it will fit almost all size nuts and bolts, squared or hexagon shaped (1/4" to 9/16"). The DOG BONE WRENCH is a veritable tool box all in one wrench. Use in the home, your car or office, aboard boats, for electrical and garden appliances. Every mechanic, machinist and hobbyist needs one. You will never miss any one size wrench when you need it for the DOG BONE has 10 sizes to fit all nuts and bolts. Made of Tempered Tool Alloy Steel with I Beam shaped reinforcement handle. **Only 59c** (Special Offer 2 for $1). Send check, cash or money order to:

NOVEL MANUFACTURING, Dept. D-089
33 Second Avenue - - New York 3, New York

Pick A
Detectron Instrument FIND URANIUM

IN
1849

All you needed was a pan and some luck in avoiding Indians

BUT IN
1955

—you've got to choose the *best* instrument for your purse and purpose!

Make Your Selection From The WORLD'S MOST COMPLETE LINE OF PROSPECTING INSTRUMENTS

Out of the dozens of different kinds and types of available radiation detection instruments—there is *just* one that really fits your prospecting needs . . . and your purse! Look for more than just appearance or "claimed" performance—instead make your choice from as wide a selection of instruments as possible—from a manufacturer offering only SUPERIOR QUALITY and assured service. Prices start at $37.50. Write Detectron for FREE details or:

see your DETECTRON dealer

NEW DEALERS WANTED
in some areas

CLIP AND MAIL TODAY

Detectron

THE DETECTRON CORP. PSA
5528 Vineland Ave., No. Hollywood, Calif.
a Trade Mark

Please send FREE information on uranium prospecting instruments.

Name _____

Address _____

City _____ State _____

The World's Most Complete Line of Prospecting Instruments

...TURN CONCRETE INTO GOLD!

MAKE UP TO $75 A DAY IN YOUR OWN BUSINESS

If you want to have your own business — to start a business on your own — here's your big opportunity! New high speed, low cost General block machine produces up to 1,000 concrete blocks a day. Sell all you make to builders, supply houses, and others for homes, factories, buildings, garages. Cash in on the building boom! You can make profits of 100% to 150% — up to $75. a day! General block machine equipped with ½ h.p. electric motor — or can be supplied with gasoline engine — works anywhere, in little space, indoors or out. Operates from ordinary house light socket. Simple, foolproof 3 step operation — so easy a child can do it. Makes superior 3 core blocks any size from 4" to 12". Also makes chimney, sash, corner and other types. Blocks meet any building code anywhere in the country. Materials — sand, water, cement, available anywhere. Simple illustrated operating instructions and mixing formulas for cement and cinder blocks supplied with each machine. Write for FREE folder with full information.

R.L.T. of New York City reports: "MY GENERAL BLOCK MACHINE PAID FOR ITSELF IN FIRST 2 WEEKS!"

Hundreds now in use the world over! Write for FREE details today!

EXTRA *Amazing illustrated book gives floor plans for 6 sensational concrete block bungalows. Tells how to lay blocks, lay out building lines, mix concrete, build steps, porch and concrete floors all at great savings. Written by experts. Can save many times the cost of the machine! Get it now! No strings attached. Send $1.*

BOOK SENT FREE IF YOU BUY MACHINE. $1 REFUNDED IF YOU BUY LATER.

GENERAL ENGINES CO.
DEPT. S-45 307 HUNTER STREET, GLOUCESTER, N. J.

AIR COMPRESSOR and ACCESSORIES at FACTORY PRICES

OFFER A: Compresser, 2x1¾, 2.8 CFM, with fan cooling fly wheel, piston type, 3 rings, positive lubrication, air tank 6½"x20", two ¼ openings, 1" inspection plug, mounting brackets and carrying handle for stationary or portable use, utility bracket, check valve, belt and pulley, safety valve, air gauge, globe valve, 20 ft. air hose, tubing with flared fittings, ¼" tee-4-way cross, air chuck, 4 nipples. Complete outfit as described and illustrated, wt. 34 lbs., regular $85 value. (motor required ¼ or ½ h.p.) FACTORY PRICE... **$39.50**

OFFER B: Same as Offer A, but with 2½x2 compressor, 4.8 CFM, wt. 42 lbs. (motor required ½ or ¾ H.P.) regular $110 value **$48.50**

Complete outfit, tank and accessories shown above, less compressor (wt. 20 lbs.) $21.75

Tank also sold separately, wt. 12 lbs..... **$9.25**

ORDER FROM THIS AD. Sold on money back guarantee. Send check or money order.

ILLINOIS MFG. & SUPPLY CO.
1831 S. STATE ST. Dept. PS CHICAGO 16, ILL.

Authenticast

NO FINER TRUE-TO-SCALE MODELS MADE!

Miniature beauties! Cast in metal and accurately scaled. Every minute detail distinctly "Authenticast" - famous the world over. See them all clearly illustrated in cat.

GET YOURS TODAY! 35¢

COMET METAL PRODUCTS CO., INC. Richmond Hill 18, N. Y.

SENSATIONAL NEWS FOR HOME OWNERS!

See push-button miracle-machine make paint colors before your eyes!

Any color . . any type paint . . is fresh-mixed instantly at "Color Carousel" stores. No extra cost, no waiting!

1 Pick a color . . wall color, house paint . . of finest Color Carousel quality then . . .

2 Dealer dials a code on the Color Carousel. Your color is fresh-mixed in seconds!

3 You get your color in pint, quart, gallon . . and the identical shade any time later!

4 Easy-to-apply Color Carousel Paints cover amazingly . . are washable, odor-free.

Color Carousel Paints

STANDARD - TOCH CHEMICALS, INC.
NEW YORK: 2601 Richmond Ter., Staten Is. 3, N. Y.
CHICAGO: 2601 Federal Street, Chicago 16, Ill.

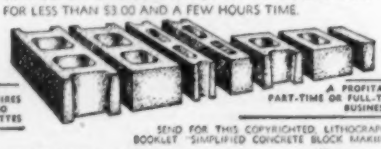
Everything You Need For
UNDERWATER
Sports and Adventure
Send for free illustrated catalog of
DIVEMASTER SKIN DIVING EQUIPMENT

Leading nationally known and foreign made products. Also inspection tested surplus at money saving prices. Underwater Breathing Apparatus, Swimming Masks and Fins, Diving Masks, Spear Guns, Water Skis, Diving Suits, etc.

U. A. S. CORPORATION, Dept. P S-4
5637 W. 63rd Place, Chicago 38, Ill.

Why Buy Expensive Equipment?

MAKE THESE CONCRETE BLOCKS AT LOW COST FOR YOUR OWN USE OR FOR SALE WITH EQUIPMENT YOU CAN MAKE FOR LESS THAN $3.00 AND A FEW HOURS TIME.



REQUIRES NO PALETTES

A PROFITABLE PART-TIME OR FULL-TIME BUSINESS

SEND FOR THIS COPYRIGHTED LITHOGRAPHED BOOKLET "SIMPLIFIED CONCRETE BLOCK MAKING"

THIS BOOKLET CONTAINS SIMPLIFIED BLUEPRINTS, INSTRUCTIONS AND PHOTO-ILLUSTRATIONS FOR THE "PLANS SYSTEM" OF MAKING CONCRETE BLOCKS WITH A MINIMUM OF EFFORT AND EQUIPMENT.

PLANS
PSM 4, West Virginia, Minnesota

PRICE ONLY $1.00 Post Paid U. S. or Canada

TUBE FREE WITH EVERY TIRE AT NO EXTRA COST

LOW OVERHEAD—LARGE VOLUME SALES & SMALL PROFITS BRING YOU THESE "LOWER PRICES" SPRING SPECIALS WHAT GOOD IS A TIRE WITHOUT A TUBE?

EXPERIENCE IS THE BEST TEACHER—OUR MANY YEARS PROVES YOU CAN'T GET MORE —WHY PAY MORE!

21 YEARS AT THIS ADDRESS AN ESTABLISHED POLICY OF CAREFUL SELECTION ASSURES YOU MANY HAPPY MILES. BE WISE—TRY ONE—YOU'LL BUY MORE! WE WELCOME COMPETITION. NO ONE CAN TOUCH OUR QUALITY & PRICE!

FINEST USED TIRES—NOT RECAPS

FREE If you buy 2 or 3 Pass. 4 Ply 32 mos. guarantee tires, WE GIVE ONE TIRE FREE. *Does Not include W. W., Sno-tires or truck tires.*

Specialists in Truck Tires—Selected for Toughest Jobs—Tops in Value
FINEST PREMIUM GRADE—34 MOS. WRITTEN GUARANTEE.

600x16	$4.75	475x19	$5.35	700x15(6)	$7.55	700x20	$10.15
600x16(6)	6.05	640x15	4.25	750x16(8)	8.75	750x20(10)	12.75
650x16	4.85	670x15	4.45	700x17	9.65	825x20	17.55
650x16(6)	6.75	710x15	4.45	750x17	10.85	900x20	17.55
700x16	5.25	760x15	4.75	825x15	10.85	1000x20	17.55
750x16(6)	7.55	800x15	5.15	600x20	7.85	1100x20	18.25
700x15	4.65	820x15	5.35	650x20	9.25	1100x22	21.55
550x18	4.75	670x16	4.05	32x6(8)	11.75	1000x22	20.95
550x17	3.85	760x16	7.05	32x6(10)	12.55	1200x24	26.95
650x15	4.55	700x16(6)	7.65	750x15	10.75	750x20(8)	10.72

ALL WHITE WALLS $1.00 EXTRA (Military Treads) 750x20 13.25

Thousands of tires shipped all over the U.S.A. All tires shipped F.O.B. Phila. Send Check or M.O. with this ad—Dept. 5—No C.O.D.

STANDARD 634 N. Broad St., Philadelphia 30, Pa.

Catalog OF 3000 Novelties 10c

Send 10c for amazing catalog of novelties, live animals, scientific supplies, hobbies, funmakers, planes & boats, looms, magic tricks, joke articles, unusual seeds, gadget timesavers, cameras, optical goods, projectors, movies, lucky jewelry, religious novelties, disguises, musical instruments, stamps, coins, puzzles, fortune tellers, radios, auto & bike accessories, telescopes, magnifiers, compasses, banks, smokers' gadgets, artists' supplies, printing sets, engines, motors, shockers, knives, billfolds, fireworks, guns, rifles, sports, books, games, plants, etc. Send name, address & 10c to:

JOHNSON SMITH & CO., Dept. 979 Detroit 7, Michigan

Pellet Shooting Automatic

Shoots 10 pellets as fast as you pull trigger. For indoor target work & fun. **Automatic action.** Holds 10 pellets. **Full size model of Colt .45.** 6½-in. long. Plastic moulded. Moving parts of die cast metal. 10x5-in. box with supply of pellets. **Complete** **$1.48**

Johnson Smith & Company, Dept. 979, Detroit 7, Mich.

BoaTop AND WINDSHIELD!

FOR THE COMFORT EVERY SPORTSMAN NEEDS!

Wrap-Around Windshields. Authentic sweep-sight, like 1955 cars! Heat-formed Plexiglas. From **$28.50.**

BoaTop. Makes any open boat a snappy "convertible". As low as **$44.50.**

BOAT COVERS that stay on the boat! Exclusive Shock-Cord Tie Downs. STOCK SIZES from **$15.00.**

At Marine Dealers. ***FREE CATALOG!***

NELSON A. TAYLOR CO., Inc. **Gloversville 14, N. Y.**

Only $1.00

The famous new GYRO-GLIDER, world's simplest and safest aircraft, is now available to amateur builders in plans and kits. Send $1.00 now for thgee-view drawings with specifications and ask about kits and detailed building and flying instructions.

BENSEN AIRCRAFT CORPORATION, Dept. PS-4
P. O. Box 2621, Raleigh, North Carolina

Name..... Address.....
City..... State.....

MEN PAST 40

Afflicted With Getting Up Nights, Pains in Back, Hips, Legs, Nervousness, Tiredness.

If you are a victim of the above symptoms, the trouble may be due to Glandular Inflammation. A constitutional Disease for which it is futile for sufferers to try to treat themselves at home. Medicines that give temporary relief will not remove the cause of your trouble.

Most men, if treatment is taken before malignancy has developed, can be successfully NON-SURGICALLY treated for Glandular Inflammation. If the condition is aggravated by lack of treatment, surgery may be the only chance.

NON-SURGICAL TREATMENTS

The NON-SURGICAL treatments afforded at the Excelsior Institute are the result of 20 years research by scientific Technologists and Competent Doctors.

The War brought many new techniques and drugs. These added to the research already accomplished has produced a new type of treatment that is proving of great benefit to man as he advances in years.

The Excelsior Institute is devoted exclusively to the treatment of diseases of men of advancing years. Men from all walks of life and from over 2000 cities and towns have been successfully treated. They found soothing and comforting relief and a new zest in life.

EXAMINATION AT LOW COST

On your arrival here, Our Doctors who are experienced specialists, make a complete examination. Your condition is frankly explained to you with the cost of treatment you need. Your decision is then made. Treatments are so mild that hospitalization is not necessary—a considerable saving in expense.

RECTAL COLON
Are often associated with Glandular Inflammation. We can treat these for you at the same time.

FREE ILLUSTRATED BOOK

The Excelsior Institute has published a New FREE Book that is fully illustrated and deals with Diseases peculiar to men. Gives excellent factual knowledge and could prove of utmost importance to your future life.

Write for your FREE copy today.

Excelsior Institute
Dept. B-77
Excelsior Springs, Mo.

Gentlemen: Kindly send me at once your New FREE Book on Diseases peculiar to men. I am.....years old.

Name.....

Address.....

City..... State.....

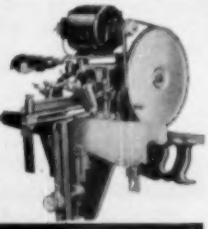
Make $20 to $30 a Week EXTRA MONEY!

With the high prices of food, clothing and everything else, just think what you could do with extra money every week! Turn your spare time into CASH—sharpening saws with a Foley Automatic Saw Filer pays up to $3 or $5 an hour. Start in your basement or garage—no experience necessary. "The first saw I sharpened with my Foley Filer came out 100%"—writes Clarence E. Parsons. No canvassing—"I advertised in our local paper and got in 93 saws"—says M. L. Thompson. With a Foley you can file all hand saws, also band and cross-cut circular saws.

FREE BOOK

Shows How to Start

It explains how you can get business from home owners, farmers, carpenters, schools, factories, etc. "I get work from 20 and 30 miles away"—says Charles H. Smith. Free Book, "Money Making Facts," tells how to start. Send coupon today—no salesman will call.



Send Coupon for FREE BOOK

FOLEY MFG. CO.
419-S. Foley Bldg., Minneapolis 14, Minnesota

Send FREE BOOK—"Money Making Facts."

Name .....

Address .....

These brand new SPERRY Gun Sights

Cost the Air Force nearly $200

Can you use one at this pennies-on-the-dollar price?

$5.88 TAX AND POSTPAID

7.45 west of Mississippi

EXPERIMENTERS
INVENTORS
TINKERERS
LABORATORIES

Here's a partial list of of what's inside!

- Silver Surface Optical Mirrors
- Big, 1½-inch F:1.9 Optical Lens
- 3 Miniature Differentials
- Electrical Fittings, Switches
- Scores of fine Gears . . Cams
- A 24-volt Rheostat and Lamp

Frankly we don't know what you'll do with these remarkable instruments! But we do know they're about the most amazing and intricate things we've seen. They're the original, super-secret (now declassified) Sperry gun sights that made our gunners the most deadly in the war. They're chock full of marvelously made gears, cams, wheels and electrical equipment, and put together with the precision and accuracy of a fine watch! Many individual parts are worth more than the price you pay now for the entire unit! **Dimensions, about 8x6x6 inches; weigh 8 lbs.** Brand new in original government cartons. Send for yours today.

RUSH YOUR ORDER TO:

JOSEPH SALES Co. Rm. 506-1740 E. 12th St. CLEVELAND 14, OHIO

135 ORIENTALS *only* 25¢

Brought to you from the farthest corners of the earth—this amazing collection of exotic valuable **STAMPS** of the mysterious Orient! 135 all-different from Borneo, Siam, China, Japan, Hong Kong, Malaya, Sarawak, Singapore, etc. Scarce Airmails; flowers, beautiful girls, temples, mountains, birds, animals. Worth $2.64 at Catalog prices! **PLUS** free booklet. **EXTRA!** Bargain lists, fascinating offers for free examination. **ONLY 25¢!** Send TODAY.

FALCON STAMP COMPANY, Dept. 168, Falconer, New York

AUTOMATIC RETOOTHER for HAND SAWS

MAKES NEW PROFITS

Cuts new teeth in 50 seconds — any size 4 to 16 points. Old teeth fall off as chips. Easy to operate. A perfect job

FREE! Write Now for Descriptive Literature

BURR MFG. CO.
8943G VENICE BLVD. LOS ANGELES 34, CALIFORNIA

RUPTURE

RELIEF...OR YOUR MONEY BACK

Write now for free booklet and pictures of rupture care. You can be helped...work steady, with low cost, easy to wear Web Truss, thousands satisfied.

WEB TRUSS CO. Dept. PS-4, Hagerstown, Maryland

YOU CAN GET IT... WHOLESALE!

SAVE UP TO 60% ON THOUSANDS OF FAMOUS PRODUCTS. OPPORTUNITY TO START YOUR OWN HIGHLY PROFITABLE MAIL ORDER BUSINESS. WORK AT HOME, SPARE-TIME. NO MERCHANDISE TO BUY OR HANDLE. NO EXPERIENCE OR CAPITAL REQUIRED. EVERYTHING SUPPLIED. SEND POST-CARD TODAY FOR YOUR COPY OF

BUY DIRECT SAVE up to 60%

FREE "WHOLESALE TRADE SECRETS"

DERROM COMPANY
21-06 WHITE, PATERSON 23, NEW JERSEY

FREE! INFORMATION YOU SHOULD KNOW NOW ABOUT URANIUM PROSPECTING

Uranium is making fortunes overnight. The Government pays up to $35,000 bonus for uranium finds. But, there is information you should know about uranium prospecting. Get it FREE in a valuable booklet by Dr. Benjamin Schloss, well known scientist who worked on the original wartime atomic bomb project. "How To Make Money Prospecting for Uranium", how to find; how to sell; legal aspects; etc. We'll send this booklet, along with a Geiger Comparator Chart: "How to Select a Geiger Counter" FREE—*write today.* NUCLEONIC CO. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. Dept. PS-54

Be a Printer!

Own Your Own Printing Plant
MAKE BIG MONEY
AT HOME, SPARE-TIME

Compare These Advantages:
"No Experience or Expensive Equipment Necessary." Materials Cost "Pennies"—Sell for "Dollars"! "Start on a Shoestring—Spare-Time!
BIG DEMAND FROM BUSINESS...
Stores, shops, factories all are looming of this new money-saving "Miracle" Method! Imagine—you save your customers up to 50% — yet you make as much as 300% profit!

Start on a Shoestring!

In your garage, basement, spare room, *anywhere!* Start so easy, fascinating Business of your own. New "Miracle" Screen method lets you print *multicolor* signs, posters, advertising displays, *anything — without* a printing press, costly engravings, artwork, or special equipment! It's *amazing!* Learn at home, spare-time. Make Big Money, Too! (up to $12.50 per hour.) Print professional jobs for *less than it would cost on a $5,000 press!*

Screen Print, 15127 So. Broadway, Los Angeles 61, Calif.

SCREEN PRINT

WHAT IS SCREEN PRINT? It's an amazing new kind of printing . . . a new printing discovery . . . that may revolutionize the entire industry. Amazingly simple to learn! You can print on glass, cloth, paper, leather, *anything*—flat or curved surfaces. You do jobs only specialists could formerly handle . . . Be first in your area to offer Screen-Printing.

LOOK WHAT OTHERS SAY!
"I would not take $1000.00 for it" . . . Mr. S. T., Fla.
"Wonderful new method . . . made $40.00 first week . . . swamped with orders." "Nothing less than fascinating." S. M. H., Mass.
"My first attempt netted me $40.00." I. D., Canada

WE SUPPLY EVERYTHING YOU NEED!
Every trade secret, all materials needed to make money *almost immediately*, can be yours! Clip and *MAIL COUPON TODAY!*

FREE!
Screen Printing Details, Success Plan, Authentic Testimonials

Copyright 1955

Screen Print, Dept. 24
15127 So. Broadway, Los Angeles 61, Calif.
Gentlemen: Please rush free details, Success Plan, etc. I understand that I am under no obligation and that no salesman will call.
Name _____
Address _____
City _____ State _____

Now! Modernize Your Home & Save $$

AMAZING NEW GLASS JALOUSIE WINDOW
100% VENTILATION-WEATHERPROOF
EASY TO INSTALL YOURSELF, QUICKLY
Proven Throughout the South—To Withstand Hurricanes

Complete with Aluminum Frame, Glass, Operator & Removable Screen—Rustproof—Guaranteed

The window that works like a venetian blind. Cool in summer—warm in winter. Safe & Clean.

OVERALL DIMENSIONS—WIDTH BY HEIGHT

19x26	$13.98	37x26	$16.49
19x38½	15.77	37x38½	18.75
19x50⅝	17.66	37x50⅝	21.50
26½x26	14.44	37x63	23.95
26½x38½	16.09	53½x26	26.50
26½x50⅝	17.75	53½x38½	28.95
19x63	19.25	53½x50⅝	35.00

SPECIAL SIZES & PICTURE WINDOWS—MADE TO ORDER

Fool-Proofed Packed—Send Ck. or Money Order—Orders Rushed
BLATT, 2827 N. W. 7th Ave., Miami, Fla.

Paint STRIPES with New "PAINT PEN"!

Straight, Curved or Parallel Lines

Use like a fountain pen with any color paint to stripe furniture, bikes, autos, model planes, toys, linoleum, wall board. Beautiful clean, crisp results every time. Can't clog or smear. Also use with glue, tempera, textile paint or ceramic under glaze. Paints on wood, glass, plastic, metals, fabrics and paper. Tool complete with tip for 1/16" stripe only $1.00 postpaid. Other complete tools with following tips, 1/64", 1/32", 3/64", 5/64", 3/32", ⅛"—$1.50 each. Extra tips 75c each. Entire kit with tool and 7 tips—$5.00. A ¼" tip only $1 each. COD's postage collect.

$1.00

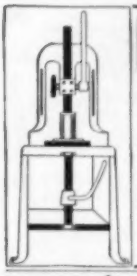
New! "DOUBLE-STRIPE" 5 Way Combination Model only $2.95
Double Stripes — one wide and one narrow or two wide or two narrow at the same time.
FREE — Send postcard for complete information —or ORDER NOW... $2.95

DEALERS: Master Paint Striping Tool in display cartons of 1 doz. FAST, Profitable seller. Write for discounts.

HOME CRAFTSMEN! New Paint Striping Tool gives "professional" results every time, simple, easy to use. Send $1.00 now

MANUFACTURERS: Write today for information about industrial and production striping tools.

WENDELL MFG. CO., Dept. 24
4234 Lincoln Ave., Chicago 18, Ill.



LIFETIME BUSINESS
EARN UP TO $200 PROFIT A DAY

as local manufacturer & owner of profitable sanitary-maintenance-janitor supply business. Our EXCLUSIVE high-production **low-cost** machine (nothing else like it on market) makes some of FASTEST SELLING PRODUCTS in this extensive field, with proven **year-round repeat business.** Needs no special skill. Machine shipped with enuf material & other products to RETURN 50% of your initial investment Our Repres. will personally TEACH YOU towards successful start. Small investment; full or part time; **exclusive franchises** available. **Act Now!**

MIDWESTERN INDUSTRIES, Dept. PS4
1005 W. Belmont Ave., Chicago 13, Illinois

Also ADULT 2 Passenger "Eshelman" SPORT CAR
1 the cost of any 5 other auto
70 Miles per Gal.
Free Catalog.

RAKES
PLOWS
CULTIVATES
HARROWS
HAULS
SPRAYS
SAWS
DOZER
MOWS
CUTS
ROLLS
TILLS
SNOW PLOW

ESHELMAN FOR BETTER LAWNS and GARDENS

Also Power Reverse. Women can operate it. Free Catalog. Write:
ESHELMAN, Dept. W-44
109 Light St., Baltimore 2, Md.
333 N. Michigan Ave., Chicago 1, Ill.
6087 Sunset Blvd., Los Angeles 28, Calif.

Get into.. PLASTIC LAMINATING AT HOME!

THIS MAN . . . is taking out of the machine a Plastic Sealing Job — ordered by mail — only 11c in material cost brings back $2.58 in cash by mail. Capacity of machine: **$26.00 profit per hour of operation.**

Make $20 to $30 a Day by.. MAGIC MAIL PLAN!

Get ORDERS and CASH from your mailman—do work in SPARE TIME at home —or expand into FULL TIME business.

Send coupon for Free facts about the newest and most fascinating of all home operated businesses. For the first time a simplified machine brings the fabulous profits of **Plastic Sealing** and **Plastic Laminating** within the reach of the small operator. Anyone can learn to operate the machine with a few minutes practice — then with our **Magic Mail Plan** can get mail orders pouring in daily with cash in every envelope. ***No canvassing—no selling.*** We even supply the circulars you mail to bring back cash and orders. Don't waste a minute. Rush your name. We'll send you FREE and postpaid, pictures, prices, details, and all the facts you need to start. Mail coupon or send name on postcard. No charge.

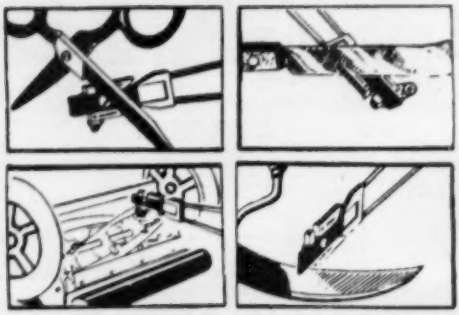
Warner Electric Co., 1512 Jarvis Av., Dept. L-9-D, Chicago 26, Illinois

Make Thousands of Beautiful Art Creations
COSTUME JEWELRY • CIGARETTE BOXES
TRAYS • CANDLESTICKS • COASTERS
LAMP BASES • BOOK ENDS...ALL IN SPARKLING COLORED PLASTIC

WARNER ELECTRIC CO., 1512 Jarvis Av.
Dept. L-9-D, Chicago 26, Ill.
At no cost to me, please rush complete details postage prepaid. I am under no obligation.
Name _____
Address _____
City _____ Zone _____ State _____

FIVE STAR TOOL

★ ★ ★ ★ ★



A successful Mail order business is based on the product. We have that product. The Five Star Handy Tool is demonstrated & sold on Television for $1.98. It Sharpens Knives, Scissors, Lawnmowers, Sickles, Scythes, Garden Hoes and Cuts Glass. We have priced these Tools very very low because we only want to do business with people wanting to resell them at a profit. Send $1.00 for two samples. $5.00 for a dozen samples. We pay postage. Gross $48.00. Ten Gross lots $44.00 Gross, one hundred Gross lots $42.00 Gross. Send one third cash Bal. C.O.D. Add 15c per tool for airmail. Firms wanting to promote this Tool on T.V. may buy a short commercial 3½ minute sound Film for $25.00 made by a fast talking demonstrator who can really cut glass. Don't go into T.V. unless you are equipped to handle at least three thousand orders a day. You will get more orders than you can handle. You will be amazed how fast you can sell these Tools. This is big big business. Don't pass it up. People are interested in the tools. Cash in on it.

Mats of the cuts shown above will be sent by request for newspaper ads, magazine ads or catalog. If you send the full amount of the order in any quantity we will prepay postage or express.

ALBERT CAHILL STEEL & IRON WORKS
ADAMS AVENUE TOMS RIVER, NEW JERSEY

Sensational Device

TESTS EYES

SAVE up to $15.00 ON GLASSES

Big news to the Millions of Spectacle Wearers and prospects. Means Freedom from outrageous prices. Sold on Money-back Guarantee.

The "RIM KING" America's Favorite Eyeglasses
Positively the last word in style, looks, durability. Has strength and beauty of Tortoise Shell color and the smartness and visibility of rimless mounting.

MAKE BIG MONEY QUICK with Free SAMPLE KIT!

Show it to friends and others. Let them use it Free and watch their amazement over this self testing system. Here is a great new opportunity in a tremendous new field of unlimited possibilities. Spare or full time. No experience needed. Write for FREE complete sample kit.

C. G. OPTICAL CO., Dept. AT-205
20 E. Delaware Place Chicago 11, Ill.

FREE! DOG BONE
10 WAY WRENCH

Fits 10 SIZES
NUTS & BOLTS
SQUARE or HEXAGON

Actually a complete set of 10 Box and Socket Wrenches in one Wrench! Fits almost EVERY SIZE square or hexagon nut or bolt—¼ to 9/16th inch SIZES! Perfect for home, car, office, factory, shop, aboard boats, etc. Every home owner, hobbyist, mechanic, or machinist needs one. Even if you own a complete set, you need the sensational, new "Dog-Bone" wrench! You never search for a mislayed wrench with a "Dog-Bone" in your tool box. It's "Ten Wrenches in One" action will have that nut or bolt tightened or loosened in a jiffy! Made of finest Tempered Tool Alloy Steel with shaped, rust-proofed, reinforced I beam. Solid, sturdy ONE PIECE CONSTRUCTION keeps it always in adjustment. No moving parts to get out of order!

FREE OFFER! —To introduce this amazing wrench, you get one ABSOLUTELY FREE of extra charge! Send just 98c for one wrench and we'll rush you a second wrench FREE! You get 2 wrenches in all for only 98c. Money Back Guarantee. Rush order, supplies limited. AGENTS & DISTRIBUTORS WANTED! Make big money! Write for low prices.

TOOL MART—Dept. DW-10, Box 881, St. Louis, Missouri.

JEEP OWNERS

STA. WAGONS • JEEPSTERS • PICK-UPS !

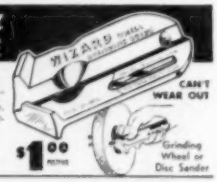
Take full advantage of 4-wheel drive by installing a Ford V-8 engine —MORE POWER—means less shifting, better traction at lower speeds, greater safety, plenty of power in high. All this is now possible by using our F-J adapter plate (Pat. Pending) Conversion Kit $43.25 incl. FED. TAX. Write for free details or send check or M.O. for prepaid delivery. Order now for early shipment.

HOOSIER MACHINE PRODUCTS CO.
314 S.E. 6th St. Pendleton, Oregon

NEW "WIZARD" TOOL DRILL GRINDING GUIDE

MAKE OLD DRILLS LIKE NEW...

For repointing dull and broken twist drills up to ½" in diameter. One piece cast Aluminum. Simple. Anyone can use it. Order yours to-day. $1.00 postpaid.



BRASS CASTING CO. **$1.00** postpaid
P. O. Box 3056 Memphis 9, Tenn.

BIG NEW "MAKE-IT-YOURSELF" *Furniture Book*

★ Saves You BIG Money!

with *"How To Build and Repair Your Own Furniture"* you'll be able to make sturdy, handsome furniture for every room in your home, at a fraction of what you'd pay in stores! You get 256 pages, 759 illustrations, 163 easy-to-do plans!

You Don't Have to Be an Expert!

Step-by-step directions, hundreds of simplified plans and photos take the guesswork out of every job and show you how to turn out professional-looking furniture—*on your first try!* You'll learn how to make or repair tables, chairs, bookcases, desks, bedroom sets, built-in cabinets, shelves, two-way lamps, much more! PLUS useful tips on mirrors, glass table tops, kitchen appliances, picture frames, rugs, etc.

7-Day Free Trial!

Order your copy of this home owner's "dream book" now *for 7 days' FREE trial!* On delivery pay postman only $2.49 plus postage—then use it for a whole week at our risk. If not delighted return for full refund!

POPULAR SCIENCE, Dept. 455
353 Fourth Ave. N. Y. 10, N. Y.

STUDY IN CALIFORNIA ABSOLUTELY FREE!!

MAIL COUPON FOR A...

FREE BOOK & LESSON SHOWING HOW YOU CAN BUILD AND KEEP A POWERFUL GIANT SCREEN TV SET!

STUDY IN CALIFORNIA ABSOLUTELY FREE!!
(Two weeks free training in our Los Angeles laboratory!)

CALIFORNIA ELECTRONICS & TELEVISION INSTITUTE Dept. 4
1121 W. PICO BLVD., LOS ANGELES 15, CALIF.
Send, without obligation, your Big Book containing hundreds of TV-RADIO Facts and Ideas plus Free Lesson. (No salesman will call.)

Name _____
Address _____
City _____ Zone _____ State _____

STUDY IN SPARE TIME AT HOME

MAIL COUPON TODAY! GET FREE TV FACTS-TV IDEAS

BONUS 12 BIG KITS OF RADIO PARTS

CALIFORNIA ELECTRONICS & TELEVISION INSTITUTE
1121 W. PICO BLVD., LOS ANGELES 15, CALIF.

GREATEST OFFER IN OUR 23 YEARS!

LOOK AT THESE ADVANTAGES FROM C.E.T.I.!! **TRAIN AT HOME** in your spare time and get into the high-paying Radio & Television field. **"LEARN BY DOING"** by building your own radio and TV SET and performing 100's of experiments in your own home. All kits are yours TO KEEP. **COLOR TELEVISION** is included in your training course. **FCC COACHING COURSE** qualifies you for higher pay!! **LOS ANGELES TRAINING** is yours at no additional expense (two weeks in our laboratory). **MAKE MONEY** while you are still training. **ACT TODAY!!** Send for our free book explaining in detail the many advantages you receive ONLY FROM C.E.T.I. YOU OWE IT TO YOURSELF TO SEE HOW YOU CAN STEP INTO HIGH-PAYING RADIO & TELEVISION JOBS WHILE YOU STUDY AT HOME IN YOUR SPARE TIME!!

NEW '55 CATALOG
NEW CHRYSLER
BOAT KITS

BUY DIRECT-SAVE UP TO 2/3 I FACTORY-TO-YOU! No Dealers

You SAVE the PROFIT

Save on the finest quality boat kits. Lowest prices in history. Mahogany decks, brass screws, easy to build. 18 models 8-16' All types!

SEND 10¢ FOR 1955 BOAT KIT CATALOG!
Includes Fiberglas-Accessories-Trailers, etc.

BOAT PLANS

OVER 50 PLANS with FULL-SIZE PATTERNS

Send 10¢ for NEW PLAN CATALOG. Build your boat from modern, easy-to-follow plans with patterns. Saves time and money! All types included: Prams to Cruisers from 6 to 25'

CHRYSLER-CRAFT (DEPT.30) TONAWANDA, N.Y.

The Modern PLASTIC for lasting Home Repairs

PERMANENTLY mends cracks or holes in wood, tile, stone or plaster. Sticks and stays put—Does not chip, shrink or fall out. Easy to use. Economical. Mold it, chisel it, polish or paint it. The big 4-lb. can is obtainable from your lumber, paint or hardware dealer at $1.25; or will be shipped direct postpaid (in U. S.) for $1.50. Complete satisfaction guaranteed or your money refunded. Order now.

DONALD DURHAM CO.
Box 804-U, Des Moines, Iowa

"I Have Earned an Average of $15.20 AN HOUR"

with Science's New Midget Miracle, the PRESTO Fire Extinguisher

W. F. Wydallis

Says William F. Wydallis, Ohio.

Many Others "Cleaning Up" —So Can YOU!

AMAZING *new kind* of fire extinguisher. Tiny "Presto" (about size of a flashlight!) does job of bulky extinguishers that cost 4 times as much, are 8 times as heavy. Ends fires fast as 2 seconds. Fits in palm of hand. Never corrodes. *Guaranteed for 20 years!* Sells for only $3.98! Over two million sold.

Science's New Midget Miracle—"PRESTO"

Show it to civil defense workers, owners of homes, cars, boats, farms, etc. and to stores for re-sale.—make good income. H. J. Kerr reports $20 a day. C. Kama, $1,000 a month. Write for FREE Sales Kit. No obligation.

(If you want a regular Presto to use as a demonstrator, send $2.50. Money back if you wish.)

MERLITE INDUSTRIES, Dept. 114,
114 East 32 St. New York 16, N.Y.
IN CANADA: *Mopa Co., Ltd., 371 Dowd St., Montreal 1, P.Q.*

---

insulate your feet!

Ask for Style 4569

Husky, handsome boots for winter cold — wonderful light-weight insulation. Springy cellular foam insole. Long-wearing comfort cushion crepe outsole with non-slip tread. Beautifully made of soft cowhide, storm welted, full gusset construction. Genuine rawhide laces. Try on a pair soon! Sizes 5/12 & 13—D & EE

Only $19.95*

*Slightly higher in the West and South

PETERS COUGAR INSULATED SHOES

GOOD FOR FREE SEEDS & PLAN
NATIONAL NURSERY GARDENS
8463 SO. VAN NESS AVE., DEPT. N-4,
INGLEWOOD 4, CALIFORNIA
Please rush me FREE SEEDS and illustrated Plan. I understand I am under no obligation. This is a Free offer from you.
Name
Address
Zone
City
State
FREE! GENUINE SEEDS
MAIL THIS Certificate TODAY
and I'll send you FREE! Genuine Seeds and Illustrated Plan
HOW TO LEARN GROWING SECRETS
SEED
NEW! "CHANCE OF A LIFETIME" OPPORTUNITY
Earn BIG Money
SOLD FOR OVER $1,000 EACH!
GROW LIVING MING TREES
It's Fun! It's Easy!
GROW ALL KINDS OF TREES. Perfect specimens of lovely FIR, fragrant JUNIPER, LEMON, ORANGE, sturdy OAK, PINE, CHERRY—nearly ANY kind, only inches high!
CAREFULLY GUARDED ORIENTAL SECRETS CAN NOW BE YOURS
Centuries ago, Oriental royalty astounded the world by growing real LIVING miniature "Dwarf Trees". The Emperors jealously guarded the growing secrets of these fabulously beautiful tiny trees, and the death penalty was given anyone giving away the secrets. However, during World War II, the SECRETS GOT OUT to Americans. Now, it's the opportunity of a lifetime for a FASCINATING HOBBY or a QUICK-PROFIT BUSINESS for anyone. Mail certificate today!
GROW THEM AT HOME in your living room, spare room, garage, window sill—anywhere. Fill your home with these beautiful wonders of nature. You start on a shoestring with pennies, but grow trees worth "tens of dollars." NO EQUIPMENT—NO LARGE SPACE—NO EXPERIENCE IS necessary.
SPARE-TIME OPPORTUNITY — for anyone wanting to combine pennies and leisure time to produce wonderful, valuable trees. IT'S A HUNDRED TIMES MORE FASCINATING than any other kind of gardening or hobby, yet can be extremely profitable because miniature specimens are new, rare and wanted by everyone.
GROW HUNDREDS AT ONE TIME—A wonderful idea for making big money. It's easy—nature does most of the work. Think of the profits of large crops when trees may sell for $25 each. New short-cut method lets you see results immediately too—no waiting.
TAKES ONLY MINUTES per day! NO LONG HOURS of tedious work—NO STUDYING detailed instructions. It's easier than you think—once you know the secrets.
GROW IN ANY CLIMATE—It's never too cold or too hot to grow most living Miniature Trees.
SOME SOLD FOR AS HIGH AS $2,000 EACH—but $25, $50, or $100 per tree is common. You pocket all the profit.
WE SUPPLY EVERYTHING — at our risk! Yes, everything you need to start growing beautiful perfect Miniature Trees can be yours—and you don't risk one penny. Our new special plan gives you this amazing opportunity. RUSH THE CERTIFICATE ABOVE TODAY. THIS OFFER IS LIMITED.
NEW SHORT-CUT METHOD
ONLY INCHES HIGH!
HELP US FILL HUGE DEMAND!
Orders come from everywhere! The popularity of these Ming Trees is sweeping all America. They're "the latest fashionable decoration 'craze'".
IN HOMES—As fascinating conversational pieces on the mantle or table in the living room, bedroom, kitchen—anywhere.
IN FLOWER SHOWS—Win Prizes, win praise. Join in competition with these wonderful trees.
FROM INTERIOR DECORATORS—they can't seem to get enough of them for their customers.
IN CLUBS, HOTELS, CHURCHES, SCHOOLS, FLOWER SHOPS, ETC. These rare and exotic trees are extremely popular and in great demand.
JAPANESE BLACK PINE only 13 inches high
CHINESE ELM only 11 inches high
CHINESE JUNIPER only 10 inches high
ORANGE only 15 inches high (note oranges)
JUNIPER only 12 inches high
NATIONAL NURSERY GARDENS

Classified Ads only 90c per word insertion, payable in advance. Minimum ad 10 words. To be included in June issue, copy should be in our office by April 25. No cancellations accepted after April 15th. Address orders to O. K. Kelly, Classified Adv. Mgr.

1 AUTOMOBILES & MIDGET CARS

BOY'S Power-driven auto. Build your own. Complete plans 25c. Sypher Co., Box 39, Sta. F, Dept. PS, Toledo, Ohio.

CROSLEY Car owners? Join with 1,000 others from coast-to-coast. Big discounts on parts, write Crosley Club, Bedford, Pa., R-2.

BUILD Midget Auto or Racer. Send 25c for complete Literature. Micro Midget Motors, P. O. Box 2368, Stanford, Calif.

NON-Profit organization offers automobile literature—old, new and foreign; dealer books, service manuals, glossy photographs; free motor magazines. Write today; get on free mailing list. Auto Maniacs, Inc., Stockbridge, Michigan.

SAVE 50%! New 3 HP 4-cycle Briggs & Stratton Gas Engines $55.95. List $110. Box 373, Kent, Ohio.

ANTIQUE Auto prints, 8½-11. Authentic, etching-style prints of famous autos; accurate in detail, richly reproduced for framing. Beautify home, office, club. Set of six $1.00. Classic House, P.O. Box 25, West Orange, N. J.

ENGINES, Wheels & Equipment for midget cars $10.00 up. Cauffiel Motors, Temperance, Michigan.

ANTIQUE Automobile color slides, 2x2. Illustrated catalog Free. Universal, Box 779P, Beverly Hills, Calif.

2 AUTO SUPPLIES & EQUIPMENT

BUY Wholesale nationally advertised auto supplies, thousands other products at big discount. Free "Wholesale Plan," American Buyers', 629-E, Linden, Buffalo 16, N. Y.

NEW And Used Parts At Savings. Complete guaranteed parts service for all models cars and trucks—1924 and later. Largest in the West. Army parts specialists. No catalog—Write for quotations. Fast Mail Order Service. Pioneer Auto and Truck Parts Co., 788 W. 13th Avenue, Denver, Colorado.

AUTO Accessory & Parts Catalog. 1955 edition—All New! 148 pages. Save up to 50%—over 50,000 items, including Hollywood Accessories, Hi-Speed Equipment, Rebuilt Engines, all parts and accessories for all cars and trucks! Hard-To-Get parts! Send 25c (refundable). J. C. Whitney, 1919-PS Archer, Chicago 16, Illinois.

FORD-T parts. Most complete stock in U.S. for All old cars. Try to stump us. B. S. Wisniewski, Milwaukee 7, Wisconsin.

LATEST Custom accessories . . . Items not in stores. New low prices. Push Button doors, trunks, windows, etc. New illustrated catalog . . . biggest ever. 25c. Eastern Auto, 3319-D, South Grand, Los Angeles 7, California.

BIG All-new 1955 speed-sport-chrome and custom hot-rod catalog. Entirely new and different. Illustrating thousands nationally known products at tremendous discounts! Send 25c (Refundable). Gotham Products, 1155 Broadway, New York 1, N.Y.

USE THIS HANDY INDEX TO FIND WHAT YOU WANT

Advertising, Agencies for Advertisers ... 53
Agents Wanted ... 43
Authors Service ... 52
Antiques, Relics & Indian Goods ... 29
Auto Supplies & Equipment ... 2
Auto Trailers ... 5
Automobiles & Midget Cars ... 1
Aviation ... 3

Batteries, Generators, Etc ... 6
Boats, Outboard Motors ... 11
Body-Building Courses, Jiu Jitsu, Etc ... 12
Books & Magazines ... 23
Build It Yourself ... 66
Business Opportunities ... 37
Business Service, Information, Name Lists ... 50

Cameras, Photo Supplies ... 34
Camping Equipment & Tents ... 16
Cartooning, Sign Painting, Chalk Talks ... 54
Chemistry & Physics ... 41
Claim Investigators ... 37A
Coins & Currency ... 26
Contests ... 46

Detectives ... 47
Dogs, Birds, Hamsters & Pets ... 17
Drawing Supplies & Equipment ... 76

Educational & Instruction ... 45
Electrical Supplies & Equipment ... 7
Engines, Motors, Etc ... 10

Farms, Other Real Estate ... 19
Field Glasses, Telescopes ... 14
For Inventors ... 60
For Sale Miscellaneous ... 71
For the Home ... 69
Formulas, Plans, Etc ... 39
Frog Raising ... 18

Geiger Counters, Treasure Finders ... 77

Help Wanted ... 42
High-grade Salesmen ... 44
Hobbies, Collections ... 31
Home Craftsman ... 65
Hypnotism ... 24

Insurance Investigators ... 38A
Inventions Wanted ... 61

Language Outfits ... 48

Machinery, Tool Supplies, Etc ... 9
Magic Tricks, Puzzles, Etc ... 25
Manufacturing ... 63
Minerals & Precious Stones ... 30
Miscellaneous ... 79
Models, Model Supplies ... 64
Moneymaking Opportunities ... 38
Motion Pictures, Slides, Sound Equip ... 33
Motorcycles, Bicycles & Supplies ... 4
Music, Song Writers & Records ... 35

Of Interest To Women ... 70
Old Gold, Jewelry, Watches ... 67
Old Stamps Wanted ... 27

Patent Attorneys ... 59
Patents For Sale ... 62
Personal ... 80
Photo Finishing, Photocopies, Etc ... 32
Plastics ... 40
Plays, Stories, Etc ... 49
Poultry & Supplies ... 21
Printing, Multigraphing, Etc ... 57
Printing Outfits, Supplies ... 58
Profitable Occupations ... 22

Radio, TV, Supplies & Equipment ... 36
Razor Blades, Shavers ... 74
Rubber Stamps & Office Supplies ... 56

Special Services ... 51
Sporting Goods, Guns, Fishing Tackle, Etc ... 15
Stamp Collecting ... 28

Tall Men's Section ... 73A
Tattooing Supplies ... 75
Taxidermy ... 13
Tobacco & Pipes ... 68
Trees, Shrubs, Roots & Herbs ... 20
Typewriters & Office Machines ... 55

Wanted to Buy & Swap ... 72
Watch Repairing ... 78
Wearing Apparel ... 73
Welding, Soldering ... 8

LACHAPELLE'S Treatment. (Patented.) Makes any car better, even a brand new one. $3.00 postpaid. Ferns Products, Box 71827-D, Los Angeles 1, Calif. Free data.

RADIOS Custom for 1952-3-4-5 Fords $38.90. Free literature. Nordic Radio, Box 582, Evanston, Illinois.

FREE Discount catalog—Speed, power, custom equipment. Almquist Engineering, Milford 42, Pennsylvania.

SENSATIONAL New Night-Drive Discovery stops blinding headlights. Scientifically designed Safety Shield. Installs in seconds. Fits all windshields. Specify R for Wrap-around. Write for Free information, or send $1.98 postpd. Night Drive, Dept. 6, 216 Vine St., Scranton, Pa.

CHEVROLET Owners—Valves noisy? quiet them yourself, information $1.00 or send $2.60 for necessary materials and instructions, postpaid. Glenn Kurtz, 31 Diamond N.E., Grand Rapids, Mich.

CAR Burning oil? Losing compression? Try Clifford's Compression Seal. $2 postpaid. Clifford's Engineering, 1329 Seventh, Aurora, Illinois.

ELECTROPLATE autoparts, novelties, mirrors. Easy, inexpensive home processes. Free booklet. Tyco Metals, Box 13231-PC, Houston 19, Texas.

ATTENTION! Why have or even start to decrease the value of your car because of rusty chrome? Now available to you a complete Chrome Coating Kit to restore, preserve, and beautify for years. (Removes heavy rust). Send $3.95 to Azee Distributors, R.F.D. 1, Box 462, Lakewood, N. J.

SHOCK Car thieves! System circuit and parts list 25c. No stamps, please. Gaylord, 804 Highland, Fayetteville, Arkansas.

HOT Cam Handbook explains duration, overlap, degreeing, valve reworking and much more. Illustrated, authoritative. Be first to know new important Cam grinding secrets. Send dollar now for your postpaid copy. Satisfaction guaranteed. Frank Morgan Co., Marysville 2, Calif.

TAPPET noises in Fords, Chevrolets and Mercurys stopped with Kaye Tappet Silencers. Free Literature. Kaye Products, 2067C So. Layton Blvd., Milwaukee 15, Wisconsin.

COMBAT Battery cable corrosion. Formula and instructions $1.00. John C. Chester, 20-A Cromwell Place, Sea Cliff, New York.

GIANT 2½" reflecting car initials in 3rd dimension. Free Sample. Trosley, Private Road, Woodlyn, Pa.

GUARANTEED! Vapor injector increases power, mileage. All cars, trucks, tractors, $3.95 postpaid. Golz Enterprises, New Hampton, New York.

A $16.00 Value for $7.95 per set. Factory guaranteed bonded brake shoes. Buick—1936-51 40, 50 series. Chevrolet—1936-50 Pass. & ½ ton truck. G.M.C. Truck—½ ton PC100-EC100-AC100-CC100. N. C.O.D. Strattford Dist., 190 Strattford Road, New Hyde Park, N. Y.

TERMINAL Guard, prevents battery terminal corrosion for life. $1.00 per Kit postpaid. No C.O.D. Batteries, 915 Brock Ave., Bronx 56, N. Y.

3 AUTO TRAILERS

BUILD your own trailer! Plans for all kinds. Illustrated catalog 10c. Jim Dandy, 225-S, Wausau, Wisconsin.

ASSEMBLE Yourself kits. Slip-on cabin coach for all pick-up trucks. Trailer blueprints. Boat trailers. Literature 10c. Comstock Trailers, 585-S, Parsons, Kans.

TRAILER Level. Clamps on coupler jack plate. Level your trailer in seconds. No guess work. Fits all trailers. $1.50 postpaid. Little Devil, 118A E. Pomona Ave., Monrovia, Calif.

EXCEPTIONAL Expanding eight foot trailer. Accommodates family of five. Build Yourself—literature, 10c. Framar Company, Wilmington, Mass.

TRAILER Manual. Over 200 pages, 250 pictures. Tells how to: buy, tow, travel, build, live-in, repair. $1.98. Trail-R-Club of America, Dept. PS-4, Box 1376, Beverly Hills, California.

ELJAY Pup—rugged, aluminum camping, hunting and travel trailer. $845.00 equipped. Eljay Mfg. Co., Winchester, N.H.

4 MOTORCYCLES, BICYCLES AND SUPPLIES

WHIZZER motor $8. Maytag $5. Midget car less wheels $15. Bantam chassis $20. (mailorder only). Send 25c (35c for First Class Mailing) for Directory Catalogue Number 64 just out, listing these and hundreds of other bargains in motorscooters, midget cars, parts, plans, etc. Midget Motors Directory, Athens, Ohio.

RECONDITIONED motorcycles and motors. Chromium accessories. Complete stock Indian parts. Expert rebuilding. Fast service. Indian Motorcycle Sales, Kansas City 27, Mo.

WHIZZER Motors $20.00; Midget car $15.00; Motorscooter $8.00; Cushman two-speed $20.00. Send 25c (35c first class mail) for catalog #28 jammed with sensational bargains in wheels, motors, motorscooters, midget cars, motorbikes, construction plans, etc. Gall, 1313 Jefferson, Toledo, Ohio.

MAGIC Bicycle motor. No spark plug, no magneto, no carburetor. 300 miles per gallon, kerosene or gasoline. Price $59.50 FOB New York plus tax. Ask for literature. Newage, 235 East 42nd, New York City.

REBUILT 1½ to 3 H.P. engines $9.00 up. Cauffiel Motors, Temperance, Michigan.

5 AVIATION

FLYING Saucer! Propelled by centrifugal force. Propulsion details—$1.00. Decker Engine Works, Plasterco, Va.

AVIATION Surplus bargain catalogue. One dime. Ort, Thomasville 22-O, Pa.

"STITS Playboy" super performance aerobatic sportplane, one-two place. Kits $995.00-$1295.00, blueprints $25.00, photo, brochure, specifications, copy C.A.R., Certification, Amateurbuilt" $1.00. Stits Aircraft, Box 3084-PS, Riverside, Calif.

BUILD Pulse jet helicopter. Plans $6.00. Rovin Engineering, 800h University Ave., Ithaca, New York.

"AT Last" a publication devoted to the aircraft homebuilder and enthusiast. Latest news, photos, plans and regulations. Send $.25 sample copy. Experimenter, 3801 S. 56th St., Milwaukee 14, Wisc.

BUILD A man carrying Helicopter Jet Engine yourself! "Practical Ram Jet Design", $1.00, "Practical Pulse Jet Design"—$1.00. Decker Engine Works, Plasterco, Va.

PROPELLERS, plans, kits for air boats, snow sleighs. Immediate delivery. Catalog 25c. Banks-Maxwell, Box 3301O, Ft. Worth, Texas.

6 BATTERIES, GENERATORS, ETC.

EDISON Nickel Storage Batteries. Any voltage, any amperage. Unconditionally guaranteed. Power Plants, Generators, Motors. Literature. Hawley Smith Co., Croton Falls 2, New York.

7 ELECTRICAL SUPPLIES & EQUIPMENT

ELECTRIC Pencil: Engraves all Metals, $1.50. Beyer Mfg., 10511-C Springfield, Chicago 43.

ELECTROPLATING equipment, anodes and solutions for all types of plating. Instructions. Assemble your own plater and save. Free Catalog. Ramyr, Dept. E-2, 1624 East First Street, Los Angeles 33, California.

LAMPS—25c brings bargain catalog showing all parts for repairing building. Contains instructions for electrifying vases, oil lamps, etc. Gyro Lamps, 5402B Clark, Chicago 40.

8 WELDING, SOLDERING

WELDING Equipment direct from manufacturer at wholesale. Portable D.C. welders $67.90 up. Helmets, cable, welding rods. Free Factory Catalog! LeJay 23, Minneapolis, Minnesota.

NEW, Portable oxy-acetylene outfit welds sheet, light plate; cuts heavy steel; heats, brazes. Just change tips. Complete, with instructions, only $76.50. Special moneysaving plan for oxygen and acetylene supply. Write today for free literature: Dept. S, Linde Air Products Company, 30 East 42nd Street, New York 17, N.Y.

"BUILD-Ur-Own" a.c. welder and a.c. power plant with a good used engine and low cost Hobart generator. Welds anywhere and supplies 5KW stand-by power for any emergency. Write Hobartweld, Box P-453, Troy, Ohio.

ACETYLENE Welding outfits new $49.00; used $29.00; Arcwelders $56.50. Eastc Welding, Dept. 43, 5085 Broadway, Chicago 40, Ill.

A. C. Welders, four sizes, lowest prices. Free Literature. Holgerson Co., Canton, Kansas.

WELDERS, $29.50, $49, $54. Morris, 1070 Inner Drive, Schenectady, N. Y.

BUILD Arc Welder. Easy, cheap to construct. Plans $1.00. Tibbs Engineering, Hushpuckena, Mississippi.

9 MACHINERY, TOOL SUPPLIES, ETC.

ALLEN Two Ton Power Bench Type Punch Press. $97.50. Circular. Allen, Dept. PSB, Clinton, Missouri.

MILLING Attachment for 6" Atlas-Craftsman Lathes $9.95. Satisfaction guaranteed. Barrel, 118A E. Pomona Ave., Monrovia, California.

CONCRETE Blocks, Machines—Standard sizes. From $39.50. Blocks made easy. Instructions furnished. Free catalogue. Francis "B" Machinery Co., 5129 S. Compton, St. Louis, Mo.

AIR Compressors on wheels. Factory prices. Free folder. Illinois Mfg. & Supply, 1831 S. State, Chicago 16, Ill.

PRECISION 3 inch sine bar for inspectors, machinists, toolmakers, gagemakers. Guaranteed .0002 accuracy $9.75 P.P. S. Marcyan, P.O.B. 325, Royal Oak, Mich.

EIGHT Boring bits drill holes in wood etc. to 1" with ¼" electric drill. Ppd. $1.98. Satisfaction or refund. Midwest Specialty Products, P.O. Box 20, Birmingham, Mich.

ENGINES, Power tools. Free wholesale catalog. Loren Products, Box 436, Danville, Illinois.

BUY Surplus power units, tools, machinery, lathes, drills, saws, welding equipment, hundreds others from government. List $1.00. Box 169ACE, East Hartford 8, Conn.

$22.50 VALUE. Self centering universal chuck with #2M Taper Arbor Key $8.95. Chuck alone $5.95. Holds over two inch stock. Use with lathe, drill press, guaranteed. Prehler, 1625 Milwaukee, Chicago 47.

MILLING Machine: 6" Table Travel $149.50. Southern Machine Tool Co., Conyers 4, Georgia.

KNURLING Tool for vice, drill, lathe, self-contained. Diameters ⅛" to 1½". Free Circular. Endema, Box 6155, Bridgeport 6, Connecticut.

TOOL Post: Turns thousands of different size concave, convex radii 0" to 4" no special tools to grind. Radius Tool, Box 476, St. Louis 12, Mo.

10 ENGINES, MOTORS, ETC.

WINDING Data, listing 225 motors, single and three phase. $1.00. Motor Data, Box 7631, Kansas City 28, Mo.

GM71-HV Discarded injector parts wanted. Mayer, 7120 Carnegie, Cleveland 3, Ohio.

REWIND Motors yourself. Complete instructions $1.00. Lewis Mfg., Howell 11, Michigan.

REBUILT 1½ to 3 H.P. engines $9.00 up. Cauffiel Motors, Temperance, Michigan.

A.C. Generators 750 Watt $38.50. Twin cylinder compressors with ½ horse $22.00. Motors 1 horse $37.50. Butler, 1885 Milwaukee, Chicago 47.

11 BOATS, OUTBOARD MOTORS

NEW, used rebuilt marine motors. Marine conversions, fittings. Free Catalog. Stokes Marine Supply, Dept. 23, Coldwater, Mich.

OUTBOARD Motor Parts—New—Used for all makes. Send stamp for price quotation, listing parts needed. Outboard Motor Mart, Inc., 229D State Street, Boston, Massachusetts.

BUY Wholesale nationally advertised outboards, thousands other products at big discount. Free "Wholesale Plan." American Buyers', 628-E, Linden, Buffalo 16, N. Y.

FREE Catalog! Boat Kits, Trailers, Fiberglas, Marine Hardware. Luger Industries, Dept. K, 4452 Nicollet Avenue, Minneapolis, Minnesota.

FULL size, cut-to-shape Boat Patterns, Blueprints. 7½-38 feet. New 1955 illustrated "Build A Boat" catalog of 50 naval architect-designed Cruisers, Runabouts, Sloops, Skiffs, Outboard Boats, Sailing, Racing, Houseboats, 50c. Marine Hardware Catalog, $1.50. Bigger, better 1955 "How to Build Boats" book, $2.50. Polywog Houseboat Plans, $12. Cleveland Boat Blueprint Co., Dept. A-77, 9400 Steinway, Cleveland 4, Ohio.

SAVE money. Boat Accessories Catalog. 25 cents in coin. Garland Frasher Marine Sales, 2626-A—Fifth Avenue, Huntington, W. Va.

16-18-20 FOOT outboard powered catamaran plans $1.00. Also other plans, literature 10c. Widd Hauber, 7451 18th Ave No., St. Petersburg 2, Florida.

MARINE conversions for Ford and Jeep engines. Catalog 10c. Lehman Manufacturing Co., 972A Broad St., Newark 2, N.J.

PLANS, Patterns, Frame Kits, for modern boats 12'-22'. Complete selection of modern boats especially for the amateur builder. State your requirements or send 40c for our complete catalog. Glen Marine, Box 568, Compton, Calif.

FIBERGLASS Top marine grade. Yard or kit. Dealer inquiries invited. Ontario Fiberglass Co., Ontario, N. Y.

BUY Surplus boats, amphibious craft, motors, hundreds others from government. List $1.00. Box 169ACD, East Hartford 8, Conn.

SEASPIDER—Unusual, amazingly fast outboard Hydro development. Easily built. Literature 10c, complete plans $1.00. Aircraftsman, 211 Lumley, Jackson, Mich.

FIBERGLAS Boat coating. Wholesale-retail. Complete information catalog—15c. Gem-O'-Lite, Box 6862B, North Hollywood, California.

AIR boat plans, kits, supplies. Catalog 25c. Banks-Maxwell, Box 3301J, Ft. Worth, Texas.

BOAT Plans, patterns, kits 8' to 16' runabouts, skiffs, canoes, rowboats, marine hardware, fibre glass. Literature 25c. Schneider Boats, Dept. PS, 1913 West Vliet, Milwaukee 5, Wisc.

BOAT Supply catalog and big list used Inboard and Outboard motors. Send 35c. Masters, 214 W. Chicago Ave., Chicago 10.

SEA Legs boat kits, prices from $39.00. Complete kits, including brass wood screws, precut parts, pre-assembled frames, foolproof illustrated instructions. Write for Free literature. Penney Woodcraft Industries, Dept. C-36, Defiance, O.

12 BODY-BUILDING COURSES, JIU JITSU & ATHLETIC EQUIPMENT

BUILD powerful arms, chest, shoulders! 22 exercises, $1. Ponsad, Box 601-C, 1100 Market, Wilmington 99, Delaware.

BUILD massive, shapely arms! $1.00. P.O. Box 717, Pottsville, Pa.

PUSHED Around? Why take nonsense from bullies, wise guys, other pests. Give them the surprise of their lives. Easy when you know Police Jiu Jitsu. Complete fully illustrated course comes in one volume, same as taught police and members of Armed Forces. Send $1 now, we will send Police Jiu Jitsu postpaid by return mail. Satisfaction guaranteed. Books Publishing Company, Amityville 2, N. Y.

12 MUSCLE Courses $2.00. Results guaranteed. Sid's System, Southgate, Calif.

BARBELLS, Dumbbells, Exercise equipment. Courses. Free booklet. Good Barbell Co., Reading, Penna.

13 TAXIDERMY

MODERN Taxidermist Magazine, Greenfield Center, 21, New York. Devoted entirely to taxidermy methods, articles, photos. Trial year's subscription $1.00.

KEEP Your specimens dust free with Plexiglas (clear plastic) domes. Write for bulletin: Norrell Inc., 2549 Broad Ave., Memphis 12, Tenn.

14 FIELD GLASSES, TELESCOPES

BINOCULAR Buys! America's largest selection. Free 56 page Binocular-Telescope Catalog. $3.95 to $250.00! United, 9043 S. Western, A-1116, Chicago 20. Dealers Wanted.

FREE Catalogue! Thousands war surplus optical bargains. Lenses, Prisms, Telescopes, Binoculars, etc. Send $1.00 for 10 Lens Hobbyist Set and Project booklet. G. Jaegers, 691 West Merrick Road, Lynbrook, New York.

BINOCULARS, Telescopes, Microscopes, terrific values $3.98 up. Request free money saving catalog. Criterion, Dept. S29, Hartford, Conn.

MICROSCOPES, prepared slides, biological stains, oculars, illuminators, mechanical stages, objectives, mounting media, parts, specialized equipment. Premium quality merchandise, lowest prices anywhere. Send 10c for Big Illustrated Microscope Catalog and Price List: Benjamin Miller, 134 W. 32nd St., Rm. 204-B, New York 1, N. Y.

IMPORTERS' amazing prices Precision Binoculars, 22 models. Free trial. Folder, "Binocular Selecting," catalog free. Prentiss Importers, Mercury Bldg., West Los Angeles 25, Calif.

WAR Surplus bargains! Millions of lenses, instruments, telescopes, binoculars, components and complete line of astronomical telescope items. World's greatest optical market place! Send only $1.00 for beginner's 10-lens kit and big instruction booklet. Stock CN. Write for catalog CN Free! Edmund Scientific Corp., Barrington, New Jersey.

REFLECTOR Telescope Kits $6.25 (3") to $175. (12"). Mirrors, Cells, Focusing Mounts, Tripods, Eye-Systems. Anything, everything in telescopes. Free Illustrated Catalog. Also ready to use telescopes from $25. to $176. Inquiries to Esco Products, 1428 Willow Ave., Dept. PSM-4, Hoboken, N. J. Sales Showroom, 166 Church St., N.Y.C.

BUILD your own Reflector Telescopes complete Kits, Mirrors, Eyepieces, Tripods all other Accessories. Request free complete illustrated literature. Criterion Manufacturing, Dept. KP5, Hartford, Conn.

TELESCOPES, Microscopes, binoculars, past quarter century. Comprehensive scientific instrument catalog $1.00. None free. Dollar deductible from orders. Harry Ross, 70 West Broadway, New York, N. Y.

DYNASCOPE—new sensational Reflector Telescope 65X-130X-167X. 4 power Finder, fully achromatic. Hardwood folding Tripod, complete ready for use. Send for details. Criterion Manufacturing, Dept. DS12, Hartford, Conn.

LOWEST prices all sizes Binoculars, Telescopes, Microscopes, free catalogue. Joe's Binocular Sales, 4627 Second Street, Detroit 1, Michigan.

MICROSCOPES, binoculars, everything optical and photographic direct from importer. Lowest prices. Free catalog. Magnification Instrument Co., 2 E. 45 Street, New York City.

POWERFUL Astronomical telescopes easily made. Clear vision lenses. 40, 100, 200 and 400 powers. $3.00 postpaid. B. Jamer, Manorville, N.Y.

REFLECTING Telescopes, completely assembled. 60X. $29.75. Guaranteed Observatory clearness. Free information. Skyscope, 475 Fifth Avenue, New York 17.

SPECIALISTS! Used microscopes & accessories. Unusual slides. Supplies. Catalog free. Research Scientific, 60 Wall St., N. Y. 9.

HOW to buy surplus cameras, telescopes, binoculars, microscopes from government—Details 50c. Brody, Box 8-C, Sunnyside 4, N. Y.

ASTRONOMICAL Telescopes . . . Special!! B-107s . . $95.00. Books. Rasmussen-Reece, Amsterdam, New York.

400X TELESCOPE makers kit contains focusing tube, erector, five finished lenses and instructions—$3.75. Giant 100X Astronomical telescope completely assembled with tripod—$15.00. Free information. Suffolk Science, Mattituck 4, N. Y.

15 SPORTING GOODS, GUNS, FISHING TACKLE, ARCHERY, TRAPPING

180 PROFUSELY illustrated pages, antique pistols, swords, daggers, armor, etc. 50c. Robert Abels, PS860 Lexington Ave., New York 21.

BUY Wholesale nationally advertised sporting goods, thousands other products at big discount. Free "Wholesale Plan." American Buyers', 627-E, Linden, Buffalo 16, N. Y.

SWIMMERS! Send $3.95 for Imported French Mask. Catalog of Skin Divers' Equipment and Books 25c. Aquafun P-S, Davenport, Iowa.

FREE Fishing Catalog—148 Pages, Over 3,500 Hard To Find Fishing Specialties. Netcraft Company, Dept. PS1, Toledo 13, Ohio.

AMMUNITION, Wholesale! Catalog 50c. Northwestern, Dept. F, 3144 Glenwood, Toledo, Ohio.

FISHERMEN—Make your own sinkers with our molds. Free illustrated booklet. Reading Instrument Co., Box 78, Reading, Pa.

TUBULAR Glass Rod Kits, Casting, Spinning and Boat. Fresh and Saltwater. Build custom rods at home for profit. Free listing of blanks, guides, handles and accessories. Fisherman's novelty key chain 25c. Rodman, Dept. C, Box 41, Wauwatosa, Wisc.

ANTIQUE gun prices. Free book catalog. Pioneer Press, Harriman, Tennessee.

FLY-Makers! 1955 free catalog. D. H. Thompson, 335 Walnut Avenue, Elgin, Ill.

FREE Ammunition list from America's large ammunition house. Act now! Send for this list today. Philip Jay Medicus, Dept. F4, 18 Fletcher Street, New York 38, N. Y.

5,000 BARGAINS, firearms, binoculars, war relics, catalog 50c. Smith Museum, Hunnemede, N. J.

MOLDS for Fisherman's Sinkers. Jigs, Squids, Casting and Spinning Lures. Free Catalogue. Sweet's Molds, Tonawanda 2, New York.

JAP rifles altering American shells $6.00. Jap shells $3.65, catalog 5c. TP Shop, West Branch 10, Michigan.

ARROWMAKING Kit—Save $2.00—completes dozen arrows, instructions, feathers, shafts, nocks, target or field points—$2.95 postpaid! Nationally advertised equipment —20% to 50% off—Nocks 30c dozen, Field Points 75c dozen, Arrow Quivers 89c, complete Bowmaking Kit $4.50. Catalog 25c (refunded). Pride Archery, Cedarbrooke, Danbury, Conn.

MANY Modern, Antique guns. List 10c coin. Ed Howe, 26 Main, Coopers Mills, Maine.

2000 COLTS — Winchesters — Western guns. Fantastic collection Antique-Modern guns, swords, daggers, armor, ammunition, accessories. Deluxe catalog 50c. Agramonte's, 201 Warburton, Yonkers 2A, N.Y.

SAVE 50% Finest archery equipment. Revealing "How to Bow-fish, Bow-hunt, Make Own Tackle, Improve Accuracy" Booklet plus catalog. (Send 25c for handling.) Malibu Archery, 1036-N4 LaBrea, Los Angeles 19, Calif.

BUY Surplus hunting, fishing, camping equipment, hundreds other from government. List $1.00. Box 169ACH, East Hartford 8, Conn.

GOLFERS. Save your good golf balls from water hazards with a Lonbill Retriever. Demountable aluminum sections 3 ft. lg. with a sturdy fabric cup. Postpaid in U.S.A. and satisfaction guaranteed. Send $2.95 for 6 ft. length—$3.95 for 9 ft. —to Lonbill Mfg. Co., 6044 E. Ninth St., Indianapolis 19, Ind.

BIG Fish lured from distance easily caught! Scientific directions. Quick-Catch Bait, fifteen kinds fish. $1. Star, 405 Madison, Fort Wayne 2, Indiana.

GUNS! Geiger counters. Free list. Owens Sporting Goods, Box 4145-C, Long Beach, California.

WE Reload your empty rifle or shotgun shells $6.00 hundred. Mail empties. Pacific Firearms, 1517 Gardner, Los Angeles 48, Calif.

16 CAMPING EQUIPMENT & TENTS

CAMPING equipment & tents direct from manufacturer. Send 10c for 100 page guide-handbook-catalogue. Morgan Tents, 10-21G 50th Avenue, Long Island City 1, New York.

WOOL Camp blankets ideal for campers, Boy Scouts. 62x84 3½ Lbs. Gray, khaki, maroon, $3.99 ea. Litchfield Wool Blanket Company, Box 562, Litchfield, Minnesota.

17 DOGS, BIRDS, HAMSTERS, RABBITS & PETS

MAKE Big Money! Raise Chinchilla Rabbits. Cash Markets Supplied. Write Today! Rocknill Ranch, Sellersville 16, Pa.

RAISE moneymaking Angora. New Zealand Rabbits. Particulars free. White's Rabbitry, Jackson, Michigan.

HAMSTERS—golden; young, $4.00 pair; fully developed, $5.00 pair. Adirondack Hamstery, Prospect 81, New York.

START Right By Knowing Facts about rabbit raising. Illustrated booklet describing all breeds, Housing, Feeding, Breeding, Marketing. 48 pages 10 cents. American Rabbit Breeders Association, 80 ARBA Building, Pittsburgh, Pa.

MAKE Big Money raising Chinchillas for us. Free catalog. Keeney Brothers, New Freedom 9, Penna.

GROW Mushrooms. Cellar, shed, and outdoors. Spare full time, year round. We pay $3.50 lb. We paid Babbitt $4,165.00 in few weeks. Free Book. Washington Mushroom Ind., Dept. 177, 2954 Admiral Way, Seattle, Washington.

RAISE Chinchilla rabbits. Also New Zealand whites. Free catalog. Wilson's Rabbit Ranch, Greer, South Carolina.

GUINEA Pigs. Home moneymakers. Booklet free. Taylors, B426B, Hapeville, Georgia.

NATURALISTS Catalog 15c. Hamsters $2.75 pair. Chameleon 85c. 200 Meal worms $1.25. Quivira Specialties, Topeka 10, Kansas.

SALE. Bred Red Squirrels, Chipmunks. Balch Squirrel Farm, Castleton, Vermont.

18 FROG RAISING

"FROG Raising!" Season just starting! Get this year's eggs. New book tells how. Free folder. Broel-B, Box 506, New Orleans 1, Louisiana.

19 FARMS, OTHER REAL ESTATE

$5.00 PER Acre. Missouri Land. Warranty Deed. Free List. John Calvert, Plant City, Florida.

HOMESITES $400 — Convenient payments. California's finest garden section. On Morro Bay's scenic shores. Wonderful fishing, boating, bathing. Fertile soil, soft-est water, temperate climate, congenial community. Free literature. Richard Otto, Department P, San Luis Obispo, Calif.

FLORIDA Beckons for fishing—vacationing—living. 5 acre baby farms about 60 miles from St. Petersburg, fine for homesites, farm or camp; close to finest hunting, bathing, boating, deep sea fishing. Only $345.00, $10.00 down, $10.00 month. For information write G. B. Potterfield, Department C, Union Bldg., Charleston, West Virginia.

CANADIAN Tax sale lands for three dollars an acre and up. Small monthly payments. Farms, timber, hunting and fishing camps, minerals. Limited number of properties. Write at once for free catalogue. Tax Sale Service, Room 113, 120 Bloor St., West, Toronto 5, Canada.

NEW Strout catalog, just out! Mailed Free! Farms, homes, businesses, 35 States, coast-to-coast, over 2,750 bargains described. World's Largest; 55 years service. Strout Realty, 255-ZB 4th Ave., New York 10, N. Y.

FLORIDA. Lakefront homesites near Ocala Forest and Saint John's River. Excellent fishing-hunting. $10.00 monthly without interest. $295.00-$895.00. Literature. Write, Lee Parker, Paisley, Florida.

CALIFORNIA Farm, ranch and timbered lands. $15 to $35 acre. Easy terms. 100% oil and uranium rights. Free catalog. Pacific Lands, 1621-B Cahuenga, Hollywood 28, California.

SAVE, Buy direct from government. Land, buildings, islands. Listings $1.00. Bureau, Box A-213, East Hartford 8, Conn.

HOMESTEAD Land—British Honduras. File-develop while living U.S. Information on climate-transportation-filing method. Send $1.00. Inter-American Land Development Service, 2425—231 Street, Torrance, Calif.

SELLING Wholesale Pennsylvania village. 104 houses. Information. Perry, Brierhill, Penna.

20 TREES, SHRUBS, ROOTS, HERBS

GINSENG, Goldenseal roots bring $1.50-$12.00 pound. Full information. F. G. Collins, Viola, Iowa.

ATOMIC Planting Tool. A Must for every gardener. Digs a round hole for fast and modern planting. Free literature. Quickie Planter, 245 E. State, Alliance, O.

21 POULTRY & SUPPLIES

RAISE pheasants on $100 week plan. Little capital and space can make you independent. Free details. Great Central System, Columbus 6, Kansas.

22 PROFITABLE OCCUPATIONS

"HOW to Make Money With Home Workshop" describes amazing methods used by hundreds of successful craftsmen. Tells what to make. How to sell workshop output spare time. Write at once for details. Craftsman, 115B4 Worth St. NYC.

$5000 FROM Half Acre growing Ginseng, crop bought. Particulars 10c. Associated Growers, Sperling, Manitoba.

FREE! "301 Profitable Small Businesses!" Amazing shoestring plans! Work Home! Start Sparetime! Deumant Surveys, Kenmore 23-T, New York.

BUY Wholesale thousands nationally advertised products at big discount. Free "Wholesale Plan." American Buyers, 628-S Linden, Buffalo, New York.

HOME Workers! Spare time—full time. Assemble luggage and cases with our complete illustrated step-by-step instructions. We sell your product—supply everything. Manufacturing representative needed in your area immediately. Unlimited profits possible. Investigate at our risk. Free details. Casecraft, 807-H4 Sunset, Los Angeles 12, Calif.

DETECTIVES—Work home—Travel. Experience unnecessary. Detective Particulars free. Write. Wagoner, P-135 West 86th, New York 24.

COST Of Things Going Up faster than your income? You can make more full or part time as a Rawleigh Dealer. Write for full particulars. Rawleigh's, Dept. D-RR-PSC, Freeport, Illinois.

MAKE Money writing short paragraphs! No tedious study. I tell you what to write, where and how to sell; and supply list of editors buying from beginners. Many small checks add up quickly. Write to sell, right away. Send for free facts. Benson Barrett, 1751 Morse, Dept. C-86-D, Chicago 26.

I Average $125 weekly selling books by mail! So can you! Start sparetime! Work home! Cooper, 246-T Taunton, Buffalo, New York.

MAKE extra money. Address, mail postcards. Spare time every week. Write Box 14, Belmont, Mass.

FOREION Employment Construction Work. If interested in foreign projects with high pay, write Foreign Service Bureau, (Dept. P.S.), Metuchen, New Jersey.

WHOLESALE! Huge selection, famous brand products. Sensational discounts! Large catalog. Unusual business plans included. Consolidated Distributors, 21-19, Lafayette, Paterson 15, New Jersey.

"HOW To Make Money with a Camera" Send 25c to Photos, Box 526, National City, California.

WELDING Pays $$$. Learn easily at best equipped school in country. Nonprofit School with low cost training. G.I. approved. Write Hobart Trade School, Box P-452, Troy, Ohio.

OWN A Collection Agency, pays big. Franklin Credit, Roanoke 7, Virginia.

MUSHROOMS grown boxes, barrels. Manureless process 50c. Spawn $1.00. Gardens, 553 William, Winnipeg, Manitoba.

GROW Mushrooms. Cellar, shed, and outdoors. Spare full time, year round. We pay $3.50 lb. We paid Babbitt $4,165 in few weeks. Free Book. Washington Mushroom Ind., Dept. 101, 2954 Admiral Way, Seattle, Washington.

FREE Folio "Up to $45,000; Unlimited Vacations." No merchandise, equipment. Unknown! Work home—sparetime! Haylings—S14, Carlsbad, Calif.

BUY Anything wholesale save 20c to 75c on every dollar spent, write for free details. Mid-Western Distributors, Marion, Ohio.

1000 JOBS in California! Mechanics, Carpenters, Drivers, Draftsmen, Clerks, Engineers, Executives. Highest pay in U.S.! New industries, salaries, and complete addresses. Latest booklet $1.00. Personnel Consultants, Box 356-H, Oakland, Calif.

EARN $40 weekly addressing envelopes. Instructions $1. Berckun, 2763 Linden, Knoxville, Tennessee.

"ATTENTION Construction, Aviation, Oilmen!!" Trades — Laborers — Truck Drivers — Engineers — Clerical — Supervisory — Many Others. Who to contact for Highest Paying Jobs. To $1500.00 monthly. Latest copyrighted reports covering over 42 countries, including U.S., St. Lawrence Project, Spain, Far North, Alaska, South America, Europe, etc. Exclusive one year Registration and Advisory Service. Application forms. Unconditional Money-Back guarantee of satisfaction. Immediate service. $2.00. Airmailed $2.25. (COD's Accepted). International Reporter, Box 1047-XN, St. Louis 1, Missouri.

TYPISTS! Moneymaking home business. Copyrighted instructions 25c. Continental Publications, 216 W. Jackson, Chicago 6, Illinois.

PLASTIC Furniture. New, profitable Instructions plans sample $1.00. Taylor Plastic Company, 78 Ferguson, Tallmadge, O.

CHRIST'S Coming is very near. Get proofs. Evangelism, 263, Duluth, Minn.

FREE Book "505 Odd, Successful Businesses." Work home! Expect "Odd"! Pacific—37C, Oceanside, Calif.

GET Ahead in '55. Opportunities unlimited. Be your own boss in a profitable occupation. Send postcard for Free Details. Midwest, 622 Sanburnol, Mpls. 21, Minn.

"OPPORTUNITIES Unlimited Raising Waterfowl," booklet Free! Sunny Creek Farm, Red Lake Falls, Minnesota.

23 BOOKS & MAGAZINES

SOCIALIST Books. Catalog, literature, Free. New York Labor News Company, Dept. P, 61 Cliff Street, New York 38, N.Y.

SPARETIME Profits Taking Subscriptions. All Magazines. Wholesale Catalog Free. Cassell Publishers, Westfield, N. J.

IN A rut? 50c coin brings you "A New Way of Life", Box 193, York, Nebraska.

BOOKS, Catalog free. G. Turner, 120 West 7th, Kansas City, Mo.

BOOKHUNTERS! All Subjects. Send Wants! Jaher Book Service, 620-K East 178 Street, New York 57.

ATHEIST books. Catalogue free. Truth Seeker Co., 38 Park Row, New York 8.

NATIONAL Geographic Magazines 1888-1952. Any issue. Periodical Service, Box 465-PS, Wilmington, Delaware.

NEW—Used books 12—$1—Bargain list, samples, 20c. Persil, 436 N.Y. Ave., Brooklyn 25, N.Y.

FREE Details. How to Make Money with Hobbies. Hobbies, 307-A 34th, Snyder, Texas.

BOOKS, Government surplus. Bargain prices. Free catalog listing 50 other free catalogs. Instructional, educational, vocational subjects. Millions of volumes, new and used. Books bought. Est. 1902. Long's College Book Co., Dept. PS, Columbus 1, Ohio.

BOOK Catalogue. 1000 Bargains, send 10c. Books Publishers, Amityville 2, N. Y.

UNUSUAL Imported books. Free catalogues. Transbooks, Box 22-PS, Brooklyn 2a, New York.

FREE 1955 Catalog of low-price "How-to-do-it." books. All subjects! Arco Publ. Co., 901 Lexington Ave., New York 17.

24 HYPNOTISM

FREE Illustrated Hypnotism, Selfhypnosis. Catalogue. Write: Hypnotist, 1324 Winnire, Hollywood 17P, California.

HYPNOTISM! Party Demonstrations. Neige Diehl, Post Office Box 2002, Seattle, Washington.

BECOME Hypnotist, Mindreader, Superman. Write today! Success School, Sparta 1, Michigan.

MASTER Hypnotism in 25 Lessons. Most Perfect, complete, easily learned and comprehensive course. Money back guarantee $1.00 postpaid. Books Publishers, Amityville 2, New York.

STUDY Hypnotism! Amazing illustrated lessons. Big 280-page treatise jam-packed with fascinating information. Simple understandable language you'll enjoy. Full price only $2.95 postpaid—or C.O.D. Plus Postage. Satisfaction or refund guaranteed. Order "Hypnotism" today. Nelson Company, 210 South Clinton, Dept. 2DV-1, Chicago 6.

MECHANICAL Hypnotist pocket-size trance causing invention works simply, quickly. Hypnotic secrets included. $1.98. Clik, GFO Box 1312A, New York 1.

HYPNOTIZE Successfully! Learn easy, fast, modern methods—including secret nerve pressure technique (Guaranteed harmless)! Complete illustrated course $1.00. H. Fowler, 1252 Dahlia Lane, Wantagh, N. Y.

BECOME Master Hypnotist. Details 10c. Hypnomaster, 833-H6 Sunnyside, Chicago 40, Ill.

AMERICA'S Most complete autohypnosis course features 12 entrancing methods. $2.00. Guarantee. Speedy Mailers, Appalachia, Virginia.

HYPNOTISM! Astounding, revealing book, $1.25. Owens, Box 4145-C, Long Beach, California.

24A GAMES & ENTERTAINMENT

CHESS Learned easily. 50c. Chrestenson, 610 Second Ave., Aurora, Illinois.

25 MAGIC TRICKS, PUZZLES, ETC.

500 TRICKS. Douglas famous 120-page Catalog, only 10c. Fastest service to magicians for 30 years. Send 10c today. Douglas Magicland, Dept. 2, Dallas, Texas.

BEST magic. Joker's novelties. Lower prices. Catalog 10c. Top Hat, Evanston 13, Illinois.

MAGICIANS. Gamblers, winning exposed. Pinball, Card, Dice. 10c catalog. Book. Box 671, St. Louis 1, Mo.

BE a Magician. Large professional magic catalog of latest tricks 35c. Ireland, F-109 North Dearborn, Chicago.

E-Z Magic catalog with surprise gift 25c. Eastern, P. O. Box 63, No. Westport, Massachusetts.

FREE Magic Vanisher With 1955 Large Professional Catalogue 25c. Maj Magic, 23 Friends, Westbury, N.Y.

FIFTY Samples Tricks, Jokes, Novelties, $1.00! Manufacturers, 1746-PS Market, Philadelphia.

SENSATIONAL Magician's Wand (Vanishes Handkerchief!) 25c, catalog included. Box 1352-PS, Philadelphia.

"VENTRILLO" Professional Voice Thrower and Catalog 25c! Box 971-PS, Philadelphia.

DOLLAR Magic Set Free with Catalog 25c. 4462-PS Germantown, Philadelphia.

LARGE professional magic catalog $1.00, including free $1.00 mystery cigarette box. H. Seltzer, Dept. 2, 1639 Fulton Avenue, Bronx 57, New York.

26 COINS & CURRENCY

$40.00 FOR certain Lincoln cents. Indianheads $60.00. 1901-S Quarter $30.00-$250.00. Hundreds of others $5.00-$3,000.00. Complete illustrated Catalogue 25c. Worthycoin Corporation, D-364, Boston 8, Massachusetts.

GET Profit and Pleasure in collecting old coins. Send 10c for 56-page illustrated coin catalog. You'll be delighted with it. Send for it now. B. Max Mehl, 374 Mehl Building, Fort Worth, Texas. Largest rare coin establishment in U. S. Established 55 years.

FREE! Foreign coin banknote and Coin Collectors' Illustrated Catalog to approval service applicants. Send 3c postage. Tatham Coin Co., Springfield-50, Mass.

OLD Money Wanted. Will pay Fifty Dollars for nickel of 1913 with Liberty head (no Buffalo). We pay cash premiums for all rare coins. Send 4c for Large Coin Folder. May mean much profit to you. Numismatic Co., Dept. 30, Fort Worth, Texas.

MORGAN Dollars; 1878-79-80-81-82 uncirculated $2.00 ea. Illustrated coin catalogue 25c. Shultz, Salt Lake 10, Utah.

COIN Magazine, 100 pages. Sample 30c. Numismatic, 7320 Milwaukee, Chicago 31.

FIVE Indianhead cents, five page bargain lists 25c. Economy Sales, Dean Street, Mansfield, Mass.

FAMOUS Sets—Lundy Island (2) $1.65; Siam (4) $1.25; Paraguay (4) 85c. Giant bargain catalogue 35c. Retail Guidebook $1.75. Bebee's, 4514 North 30th, Omaha 11, Nebraska.

FOREIGN Coins, 25 different $1.00. Webb, 2200 Quintara, San Francisco 16, California.

INDIAN Cent with bargain lists 10c. Hutchinson, 3463 "I" Street, Philadelphia 34, Penna.

FIFTY Indian cents $2.00, twenty different dates $1.00. Sayers, 1000 East Unaka, Johnson City, Tennessee.

50,000 COINS, medals, bills. Lists free. Collectors Magazine 10c. Nagy, 8-A South 18th, Philadelphia 3, Penna.

WE Buy Indianhead pennies, all dates, catalogue containing complete price list, 25c. Robards House, Box 169-PS, Sebree, Kentucky.

U.S. Coin list free. Stone Coins, 192-S Washington, Boston 8, Mass.

SIX Different Indian Head cents for 25c. Twenty different Indian Head cents for $1.00. Eight different Liberty Head nickels $1.00. Five different Canadian large cents 50c. New 1955 Coin List free. No approvals. Bryson Stamp Company, 612 White, Toledo 5, Ohio.

WANTED All types U.S. Coins, Confederate Currency. Send 25c for Complete Price Catalogue plus two foreign coins. Longino, 611 E. Columbia Ave., College Park, Ga.

30 FOREIGN Coins $1.00. 10 Chinese Banknotes $1.00. Valley, Box 66, McAllen, Texas.

28 STAMP COLLECTING

GIANT Stamps! Valuable collection of the biggest stamps on earth! Includes mammoth diamond-shaped airmail; huge triangle; gigantic animal and ship stamps; many others. Extra: Set of 5 midget stamps plus genuine wooden nickel. All for only 10c covering mailing expenses. Approvals included. Mystic Stamp Company, Camden 14, New York.

FREE—Complete set of Famous Americans, Flags, Parks and Presidentials to approval buyers. Send 5c for 15 of the above stamps plus full particulars. Triboro Stamp Company, 145 Nassau Street, Dept. 204, New York 38, N. Y.

WORLDWIDE. 50 all different, absolutely free, just to introduce our incomparable approvals. Kent Stamp Company, GPO Box 87, Brooklyn, New York.

200 DIFFERENT, including Roosevelt triangle, 10c to approval applicants. S. Avalon Stamp Co., Springfield, Mass.

"WOW! 153 All Different Germany, 10c" Zeppelins, Semi-Postals, Airmails, High Values. Big Bargain lists and approvals included. Jamestown Stamp, Jamestown 509, New York.

50 DIFFERENT U.S. 5c with bargain approvals, lists, Bookman, Manatee 2, Fla.

TWO $5.00 US stamps plus 20 different, 10c with US approvals. Irwin Stamp Co., Box 1100, Brooklyn 30, New York.

WEIRD Diamond Shape Coffee Stamps, lovely Flower Triangle. First American Big Commemorative, Greenland Idol Dancer, etc. Free with approvals. Capital Stamps, Little Rock 10, Arkansas.

AMAZING Offer! 200 U.S. stamps—including commemoratives, airmails, high denominations to $1.00—only 10c to Approval Applicants!! Illustrated Bargain Lists free. Mystic Stamp Co., Dept. 55, Camden, New York.

FREE!—Big United States Catalog. Valuable guide and check list. Hundreds of illustrations. Approvals. Harrisco, 1019 Transit Bldg., Boston 17, Mass.

LOOKING for better U.S. Approvals??? Write. New-Way Stamp, Lawrence, Mass.

FABULOUS Collection—Large U.S. Commemoratives. Only 10c. Approvals, Raymax, 39-X Maiden Lane, NYC 38.

300 DIFF. World wide 25c. Plus surprise packet. Mammoth packet list free. Econopackets, Box 168, Riverside 22, Calif.

FREE Stamp Collection:—100 different stamps from Europe, Africa, Asia, Scandinavia, Balkans, etc. 3c to approval applicants. Tatham Stamp Co., Springfield 50, Massachusetts.

FREE U.S. stamps. 1943 Occupied Nations Flag, Airmails, Commemoratives, included in collection of 25 different U.S. plus $5.00 stamp. Everything for 10c mailing charge. Approvals. Willett Company, Box 511-S, Port Chester, N. Y.

GIVEN! Octagonal stamp; giant triangle; diamond; mammoth and midget stamps, to foreign approvals buyers. Gifts with purchases including $7.00 Album. Plymouth, Dept. A-3, Bell, California.

FIRST U. N. Set. Among World's Prettiest. Only 10c. Approvals. Welles, Box 1246-V, New York City 8.

225 STAMPS For only 10c! This mammoth value includes Airmails, Pictorials; stamps from strange Countries cataloguing up to 25c each! Also Approvals. Mystic Stamp Company, Camden 55, N. Y.

FREE U.S. 72 page catalogue. Contains almost 1,000 illustrations; over 10,000 delightful bargains, plus "How to Collect." Stone, 192-S Washington, Boston 8, Mass.

FREE Animals, birds, triangles, flowers, ships, locomotives, kings, dictators, multicolored, historical, geographical, musical, battles, giants, midgets and over 100 others. Fascinating story approvals. Send 10c handling please. Canada Stamp Co., 1919 Main St., Niagara Falls, N. Y.

ALBUM! Capacity over 1000 stamps! Only 10c. Stampmart, Hartford 1, Conn.

BARGAIN Hunters' Attention! Free stamp magazine. 1000 interesting stamps for your approval inspection. Completely catalogued, substantially reduced. Free tongs and hinges with purchase. Niagara Stamp Co., St. Catharines 32, Ontario.

100 DIFF. Latin America 25c, Packet list Free. Econopackets, Box 168, Riverside 22, Calif.

U.S. and Canada 66 Diff. only 6c with Bargain Lists. Hudson's, Box 556, Pinedale, California.

IONIAN Island set free. Approvals. W-B Stamps, Wilkes-Barre, Pa.

FREE—Benelux Lands—25 different. Approvals. McLendon, 1830 West Fifth, Montgomery, Ala.

10,000 DIFFERENT Worldwide $5.00 down, $5.00 monthly; lists free. Dale's, 1495-c Grand, San Leandro, California.

FREE U.S. and Canada Bargain Lists, illustrated. Baystate Stamps, 44 Bromfield, Boston 8, Mass.

IMPORTANT! Useful! Color guide! Free! Over 100 different colors shown and named to identify rare from common stamps. Own it! Also informative "How to Collect Stamps." Send 10c postage. Approvals. Goliath Co., Bethlehem N2, N. H.

THOUSANDS Of stamps for your collection at 1c and 2c. See our big books of attractive approvals. Everything catalogued. Large discounts. Modern Stamp Co., Dept. B-2, Ferrysburg, Mich.

FREE — Triangles with Helicopters, Flowers, Birds—Ugly Bugs, 26 others for 3c postage. Approvals. Delvals, Alloway, New Jersey.

100 CANADIAN and Newfoundland stamps including Early Issues, Commemoratives, large size Pictorials. Free for 5c postage. Empire Stamp Company, Dept. PRR, Toronto, Canada.

FREE: Mint British Colonies from Brunei, Papua, New Guinea, Caymans, Gilbert Ellice, Seychelles, Sarawak, Dominica. Free with approvals. Viking, 11-P Northern Blvd., Great Neck, N. Y.

TOPS! Free book, "How To Collect Stamps." Send for your copy today! Approvals. Littleton Stamp Co., Littleton E2, N. H.

FREE Stamp magazine, 327 different stamps 25c. Including Indonesia, Newfoundland, British Colonies, Vatican, Red Russia, Hitler Heads, Indian States, Animals, Airmails, French Colonies, rarities, unusuals. Wonderful bargain. Approvals. Niagara Stamp Co., St. Catherines 22, Ontario.

FREE—Set Flower Triangles, Rhineland, Anchal, others. Approvals. Delton-Page, Box 201, East Paterson, New Jersey.

FREE—Red China—25 different. Approval. B-R Stamps, Box 100, Holmes, Pa.

FREE—Triangles only—Five Beauties showing birds, flowers, sports, planes, giants, midgets. Approvals. Daniels, Rt. 2, Box 459, Florissant 21, Missouri.

FREE—Stalin Giant "Iron Curtain" Set. Approvals. Seminoles, Dayton, Tenn.

ROOSEVELT, Greece, Pope Triangle, Greenland, Israel, 51 others. 5c Approvals. Longhorn, Box 3068-P, Lubbock, Texas.

GORGEOUS Orchid Diamond, plus Enormous Five Colored Flag, Will Rogers Airmail, First American Commemorative, Midget, Corsica, 25 others, 3c to approval buyers. Belmont Stamp Shop, Washington 15, D. C.

DEALERS Wholesale catalog. Postage 3c. Franksco, 5031 Queensbury, Baltimore 15, Maryland.

133 DIFFERENT U.S. Commemoratives—$1 with distinctive approvals. Goodman, Box 133, Bloomfield, N. J.

14,000 DIFFERENT — Yours on our streamlined, systematic Club plan for only 50c weekly. Big shipment every two weeks. Details free. Sjoquist, Box 217, Valley Stream 70, New York.

50,000 STAMP grab-bags, 25c each. Anderson, Box 1, Reading, Pennsylvania.

ABSOLUTELY free! 50 different! Approvals. Alligator, Box 61-PSB, Miami 1, Florida.

100 JAPAN 10c. All different with approvals. Gould's, Box 631, San Francisco 1, California.

GIANT approvals, thousands different at 1c and 2c. Wahl's Stamp Exchange, 7008 Farragut, Chicago 31, Illinois.

ECONOMICAL ½-1-2c Approvals. 22,000 varieties available. Dresel, Box 270-T, New York 25, New York.

FREE Sample—Interesting, informative. Illustrated! National Stamp News, Anderson, South Carolina.

OVER 200 Different better stamps. Beautiful triangle set, pictorials, 10c. Approvals. Greene, 4301 46 Street, Long Island City 4, N.Y.

FREE Premium U.S. approval applicants. Chase's, 24 Salem St., North Andover, Mass.

FREE 105 British Colonials, pictorials, Mauritius, Tanganyika, Pakistan, Nigeria, Rhodesia, Singapore. Fascinating story approvals. Send 10c handling, please. Canada Stamp Co., 19219 Main St., Niagara Falls, N. Y.

UNUSED Special. France Marshal Petain, Netherlands Folklore sets, catalog $2.52, 10c. Approvals. Adults only. Kingsway Stamps, Dept. 20, 268 Kingshighway, Brooklyn, N.Y.

FREE! Rare Ecuador error. Stamp catalogs $1.50 given to new approval applicants. Moulinbow, 304E Lynn, East Northport, New York.

WANT Used U.S. $2 and $5 stamps, 10c each. Extra for pairs, blocks. Cleveland, 2253 Columbine, Boulder, Colo.

POPULAR Worldwide grabags 10c. Big Variety, Monjar, Fairmount, Cincinnati 14, Ohio.

MONACO triangle set free. Approvals. Weitz, Box 8JG, Orange, N. J.

SUPERIOR U.S. Collection, 37 different free to approval applicants sending 10c handling. White, 516-W Avenue L, Brooklyn 30, New York.

U.S. Mint Special! Complete National Parks issue perforated and imperf. $3.00. Price lists. Wm. Kuehl, 3125 East K, Tacoma 4, Wash.

UNUSUAL Souvenir Sheet Russia 1957 10c with approvals. Kingman, 30A Empire, Yonkers 4, N.Y.

100 DIFFERENT U.S. Commemoratives plus half pound U.S. mixture, $1.00. Charles Solomons, Box 22, Cambria Hgts., New York.

GIANT Worldwide selections 2c each regardless of catalogue. George Richie, 1529 Sixth, Alameda, California.

UNBEATABLE! Ten complete mint sets only 5c with approvals. Sunlite, Box 1259PS, N. Y. 17.

SIXTY Different U.S.—Commemoratives, airs, dues, etc. 10c handling. Approvals. Swampoore, Waverly, Illinois.

HOW Many of your album pages would a few stamps complete? Want to fill them? Try our approval books of 1,000 at 1c and 2c. Values will amaze you. Also U.S. Roseland Stamp Co., Dept. B-36, Spring Lake, Mich.

MINT U.S. 681, 795, 796, 798-802 for 50c with U.S. approvals. Eben Hutton, 21 Marshall, Milford, New Hamp.

FREE, 1898 U.S.; lists. Schneider, Route 2, Box 555, McHenry, Ill.

SUPERIOR Worldwide mission mixture. Amazing variety! Bulging sample $1.00. Bay Nielsen, 1834A Bayle, Montreal 25, Canada.

FREE—British, Spanish, French Colonial collection. Approvals. Pleasure Stamps, 1865A—52nd, Brooklyn 4, N. Y.

OLD scarce U. S. seconds on approval. Slightly defective, bargain prices. Hearnfield, Clintonhill Station, Newark 8, N. J.

200 DIFFERENT, plus Macau, Rhodesia, Mauritius, etc. Only 10c to approval applicants. Evden, Box 128, Valley Stream 42, New York.

WONDERFUL Offer. Seven complete mint sets only 10c with approvals. Reich (826), 1033 Lawrence, Chicago 40.

UNITED Nations cover free to applicants of U.S. or British Colonial approvals. Alan A. Taylor, Skyland, N. C.

U.S. 40 different 10c. 40 different Commemoratives 25c. Both 30c. Seidenberg, Appleton, Wisc.

1500 MIXED foreign stamps $1.00. No approvals. Aaron, 789 Valencia, San Francisco 10, Calif.

50 DIFFERENT Bulgaria 10c! Approvals. Ensign Stamp Company, Dept. S, Berdan Avenue, Paterson 2, New Jersey.

100 DIFFERENT Spain 25c. Penny approvals included. Reed, Box 980, Chicago 90, Illinois.

MINT U.S. approvals. Russell Patrick, 5550 East 42nd, Indianapolis 26, Indiana.

PICTORIAL Packet—Triangles, Bi-Colors, etc.—10c! Approvals. Cole, 43-G Rinewalt, Buffalo 21, N.Y.

PENNY Approvals jammed with Bargains. For better values, try Putnam Stamp Company, Mahopac, New York.

TURKEY—50 different (worth 50c). Only 10c with approvals! Saxon, Vista, California.

FREE large Pictorials packet with Penny approvals. Harrison, 181 Clarkson Ave., Brooklyn 26, N. Y.

UNBELIEVABLE! Lot Africa, Asia, Latin America, set Triangles, also 100 different 10c with approvals. Bennett, Candor 1, New York.

GERMANY B257-69, Warplanes, Machinegunners, Assaultboats, given "Approval Buyers." William Deems, Ravenswood, W. Va.

INVERTED Center, Libia 25a, $1.49, pricelists free. Biltmore, 260 E. 161st Street, N. Y. C. 51.

EISENHOWER, Syngman Rhee Korean stamp, plus world-wide packet, free to approval buyers. Conquistador, 2627E Troy Road, Schenectady 9, N. Y.

ESTONIA Carrier pigeon set free. Approvals. Canyon Stamps, Box 808, San Fernando, California.

CIVIL War revenues. 10 different 25c. Approvals. Anzac, 53 Bromfield, Boston 8-P, Mass.

STAMP Collectors key chain, with 2 rare stamps in beautiful block, clear plastic. Special—35c. Berns, 5940 N. 19, Phila. 41, Penna.

500 CHINA, Germany, Hungary or Austria, $1.00. No Approvals. Merkel Stamps, 45 Cherry, Holyoke, Mass.

FREE Worldwide Stamp Assortment. Approvals. Kunkel, 1316 Berryhill, Harrisburg, Pennsylvania.

PENNY Approvals by country. M. H. Hoerning, 168, Farmington, Ark.

U.S.—75 Different, 10c. Approvals. Farmer, 4913 Rosewood, Los Angeles 4, Calif.

135 DIFFERENT U.S. commemoratives $1. Request approvals. Harold Holub, 18 East 198th Street, New York 68, N. Y.

WORLD Approvals from 33,000 collection. Churr, Box 117, Williamsville 21, N. Y.

FREE U.S. illustrated bargain catalogue. Rothberg, 53 Bromfield, Boston 8-P, Mass.

TRIANGLE — Diamond — Midget — Giant — Roosevelt — Hitler — Stalin—thirteen others—3c! Thrifty Stamp Company, Silver Spring, Maryland.

49 CANADA Different 10c! Approvals! Moldenki, Box 8, Hopewell Junction, N.Y.

FREE set! with sets on approval. Leonard Krier, Norcatur, Kansas.

37 DISTANT Countries 10c, List Free! 555 World, $1.00. Approvals! Bristol Stamps, Collinsville, Conn.

NIGERIA Coronation set free with satisfaction approvals. Gobie Approvals, 931-D Emwell, Ferndale 20, Mich.

CORONATIONS. 10 different only 10c with approvals. Seminole Stamps, Box 1138-S, Coral Gables 34, Florida.

U.S. Illustrated Price List Free. Lush, 6422B, Ellsworth, Detroit 38, Mich.

CIPEX souvenir sheet plus 25 different U.S., 10c. Approvals accompany. Village Stamps, 90-39B 214 Street, Queens Village 28, New York.

50 DIFFERENT Argentine 10c. Approvals. Reuter, 611D W. 40th Pl., Los Angeles 37.

COMMEMORATIVES! Bicolors! 20 large, cataloguing over $2.50 only 25c. Approvals. Wilheim, 14646 38th Road, Flushing 55, N. Y.

1000 FINE Mixed U.S. 25c. Wright, 723 Wasnington, Hagerstown, Maryland.

EARLY U.S.! #26 issued 1857 plus 20 other nineteenth century 25c to approval applicants. AAA Stamp Company, Arcade Building, St. Louis 1, Missouri.

FREE! $10,000 Airmail! Persia! Jugoslavia! Approvals. Keating, 2520 Boulevard, Jersey City, New Jersey.

250 STAMP Hinges and 25 different U.S. 3c with approvals. Jaydee, 218 West Dickinson, Grand Rapids 7, Michigan.

MONACO Nudes—10c with approvals. Royal Stamp Company, Tamaqua 2, Penna.

PLEASURE Is yours for pennies from our books of 1,000 stamps. Neatly arranged for your selection. All catalogued for your convenience. Large discounts. Wolverine Stamp Service, Dept. B-26, Fruitport, Mich.

50 DIFFERENT U.S. Commemoratives 25c. Durham, 1021 N. Granger St., Saginaw, Mich.

U.S. Revenues on approval. Eljay, 2868 Times Square Station, N. Y. 36, N. Y.

LIBERIA Airmails, mint, face value $3.05, 50c with approvals. Excello, Box 489, Red Bank, New Jersey.

U.S. Classics—Over 50 Yrs. Old. 15 Selected oldtimers. Missing in biggest collections. All 15 at less than 1c each, 10c with approvals. Jaro, Box 246-P, New York 8.

U.S. Commemoratives, 100 mixed 25c. Approvals. Morris, 2012 15th, Lubbock, Texas.

29 ANTIQUES, RELICS & INDIAN GOODS

4 FINE Arrowheads $1.00. Spearhead $1.00. List free. Lear's, Glenwood, Ark.

ARROWS: Thirty, assorted colors $5.00; ten $2.00. Book-Relic Catalog 25c. Tilton Relics, Topeka 10, Kansas.

30 MINERALS & PRECIOUS STONES

GENUINE Quartz Crystal Stars, 60 sparkling facets. Drilled for earrings, pendants. ⅜" $12.00 doz., sample $1.75. Wholesale jewelry catalog 50c. Diagem Jewels, Hampton Bays 10, New York.

ATOMIC Trinitite! Send 25c for actual radioactive atomic blast specimen and information on prospecting for tungsten, uranium, mercury with ultra-violet Mineralite. Dept. PS4, Ultra-Violet Products, Inc., South Pasadena, California.

URANIUM Mineral Pitchblende sample $1.00. Homogeneous Co., Box 703, Coatesville, Pa.

VIRGINIA Fairystones (Staurolites). Collection, including legend, $1.00. Virginian, Box 662, Inverness, Florida.

TEN beautiful highly polished genuine gems. Only $1.00. Baroque shapes. O'Brien's, 1116B Wilcox, Hollywood 38, Calif.

GEMCUTTING. Silvercraft authority. Illustrated magazine tells how. Cut rocks, make jewelry. 150 ads illustrating equipment, offering gems for collectors, cutters. Postal brings literature. Lapidary Journal, Drawer D, Del Mar, Calif.

GEMSTONES, Mineral specimens, Geiger Counters, uranium samples. Every variety. Lowest prices. Free booklet. Plummer's, 4720 Point Loma Avenue, San Diego 7, Calif.

SAPPHIRE—tourmaline—topaz—garnet—peridot. 5 uncut gem specimens, $1.00. O'Briens, 1116B Wilcox, Hollywood 38, Cal.

GENUINE Gems, crystals, golden topaz, rubies, sapphires, ruby garnet, others. Ten plus specimens for dollar. Helpenstell's, 2216 2nd Place, Lubbock, Texas.

BEAUTIFUL Large color chart of gems plus free offer $1.00. Mueller's, 1000 E. Camelback Road, Phoenix, Arizona.

SPECIAL Tumbled gems 3 oz. $1.25 includes tax and postage. Excellent quality. Dixie Rock Shop, 3245 Prospect Ave., So. San Gabriel, Calif.

GENUINE Stone earrings. Rose Quartz, chrysocolla, tigereye. Red or brown, $2.00 per pair, 3 for $5 postpaid. Pascoes, 1414 West Glenoaks, Glendale 1, Calif.

FACTS for rockhound trips, uranium, prospecting, lapidary hobbyists, every month; 12 issues, $1.00. "National Prospectors Gazette", Bellflower 51, California.

TEN N.Mexico minerals $1.50, six fluorescents $1.00, fools gold 25c. Mineralight, books, Geiger counters. Hartson, Winston 5, N. Mex.

BEAUTIFUL Specimens, Arizona's famous petrified wood. $1.00. Becoming scarce. Hensley Brothers, Holbrook, Ariz.

31 HOBBIES, COLLECTIONS

INVENTING can be an interesting and profitable hobby. Write for complete particulars. Institute of American Inventors, Dept. 30-E, 631-E St., N. W., Washington 6, D. C.

NAZI Emblem sample and catalog 25c; 37 different American emblems $1.00. Hobbyguild, 550A Fifth Avenue, New York.

UNUSUAL Hobby: Authentic Army patches, insignias, ribbons, enameled crests, Navy rates, 50 assorted for $1.00. Rex Military, Dept. D., 1186 Broadway, N.Y.C.

HOLLOW Tree Monthly magazine. Year—50c. Sample—15c. Lawrence, Kansas.

100 MILITARY Official shoulder patch insignia. Free album. $5.00. All different. Wolf Appleton, Inc., 566-E Broadway, New York 12.

MILITARY Miniatures: U.S. Marines, American Revolution, Civil War, Custer's Cavalry. Illustrated Catalog 25c. Bussler Miniatures, Dept. E, 59 Russell Park, Quincy 69, Mass.

NAZI Medals, ribbons, flags, daggers. Big packet $1.00. Illustrated lists. Medcrafts, 1923 34th St. S.W., Calgary 3, Canada.

UNUSED matchbook covers—100 different $1.00—36 page catalog 25c—matchcover album $3.00. Charles Edelman, 1311P East 84, Cleveland 3, Ohio.

FREE! Leathercraft catalog. Do It Yourself! Tandy Leather, Box 397BH, Tulsa, Okla.

LATEST Fad! Collect different leathers, suitable for mounting; 50 all different, $1.00 postpaid. Devon Publishing, 6349-A North Western, Chicago 45, Ill.

MILITARY Miniatures, Tanks, Insignia. Catalog 25c. Griffin & Gray, (M-3), 72-05 67 Street, Glendale 27, New York.

32 PHOTO FINISHING, PHOTOCOPIES, ETC.

PARTICULAR? Custom Finishing Guaranteed. 8 Jumbos 35c, 12—50c. Special! 35mm 36 exposures $1.10. Free Mailer. Flash-Foto, Box 36H, Brooklyn 4, N. Y.

12 EXPOSURE rolls 39c, jumbo prints. Guaranteed work, one day service. Lincoln Studios, Dept. L, Box 13, Lincoln, Nebr.

SENSATIONAL Bargain! Two jumbo prints each good negative for the price of one, with this ad. 8 exposure roll Jumbo 35c. 12 exposure 50c. No limit number rolls with ad. Billfold prints 20 for $1.00. L. A. Eastman Studio, Bode, Iowa.

FREE Film! Write for mailers. Vets, Box 37PS, Montalvo, California.

AMATEUR Photographers sell your pictures "Photo Market Guide". Send $2. Mackwin, 493 Coral, Bridgeton, N. J.

ARTISTIC Your snap shot reproduced on lamp shade, tile, brooch, plaque, compact, bracelet. Unique processes, unlike usual photograph. Literature free. Wells System, 14040 Euclid Avenue, Cleveland 12, Ohio.

FREE Beautiful 5 x 7 Redwood Logging print with each develop and print order. Quality Jumbo prints 6c ea. Satisfaction guaranteed. P. O. Box 114, Eureka, Calif.

SPECIAL Introductory offer 8 Jumbos 25c, 12-35c. Western Photo, PS-45, Box 298, San Francisco 1, Calif.

4x6 OR $3\frac{1}{4}$x$4\frac{1}{2}$ oversize glossy velox prints 8 exposures 40c. 12 exposure 60c. 16 exposure 80c. Hagner Photo Service, 1318 West Columbia Avenue, Philadelphia 22, Pa.

SURPRISE gift with first roll developed. 8 jumbo superpak album prints or 16 contact prints 40c. 12 exposure roll 50c. Certificate for 3—5x7 enlargements. Owl Photo Co., Weatherford, Okla.

JUMBO Prints: 8-exposure roll 30c; 12 exposure 45c; 16 exposure 55c; Reprints 4c; Guaranteed Quality Since 1915. We do color. Mail Order Photo Service, Box 297, Watertown, Wisconsin.

8x10 ENLARGEMENT From any photo. Double weight paper 65c. Two $1.00. Original returned. Hammond Company, $18\frac{1}{2}$ North Main, Hutchinson, Kansas.

AMAZING! Three 8x10 enlargements, portrait quality paper $1.00. Send negatives. Star Photo, P.S., Box 18, Andover, Mass.

TRIAL Offer—Special with ad only. Roll developed and 8 Jumbo Prints 35c. Complete with Memory Folder. Best quality. Very fast service. Send coins—No COD'S. Crown Photo Service, Box 392, Augusta 2, Georgia.

YOUR Photos and valuable papers up to $5\frac{1}{2}$"x$7\frac{1}{2}$" Plastic Laminated 50c. Allen Laminating Company, Box 371, North Wilbraham, Mass.

33 MOTION PICTURES, SLIDES, SOUND EQUIPMENT

MOVIE Camera Film: 8 mm roll $1.50. 16mm 100' $3.00. Free processing. Better Films, 752 New Lots, Brooklyn, N. Y.

TAPE Recorders, Tapes, Accessories. Unusual Values. Dressner, Box 66, Peter Stuyvesant Station, New York 9.

WORLD'S Largest Selection Of Films. Buy, sell, exchange, rent features and shorts. Free bargain bulletin. Specify 8mm-16mm-silent or sound. Dept. F-4, Peerless Camera—415 Lexington Avenue—New York 17, New York.

SAVE 50%! Guaranteed-fresh color, b&w movie film! 8mm, 16mm. Free catalog! Ess-H, 47th Holly, Kansas City 12, Mo.

8 & 16MM Professional National Parks Movies in Kodachrome. List Free. Ideal Service Supply, 4644 W. Geary, San Francisco 18, Calif.

FREE! Blackhawk's Spring sale catalog new and used 16mm. films, used 16mm. sound projectors, new 2"x2" color slides and 8mm. 16mm sound rental films. Blackhawk Films, 1167 Eastin, Davenport, Iowa.

5,000 8-16MM. Silent-Sound Films. International, 2120 Strauss, Brooklyn 12.

HUGE listings, color, B&W sports, comedies, travel, musicals, etc. Catalog 15c. Turke Films, Hinsdale 1, Illinois.

TAPE recorders accessories. Best buys. Boynton Studio, 10P Pennsylvania, Yonkers, New York.

MOVIE-Makers! Save 50% on your 8-16mm film and Do It Yourself processing equipment. Free Catalog. Superior Bulk Film Co., 448 N. Wells, Chicago 10.

34 CAMERAS, PHOTO SUPPLIES

BASS Says: Quality Cameras Since 1910. When in Chicago visit the Camera Cross Roads of the World . . . or write us for your favorite equipment, new or used. Satisfaction Guaranteed. Bass Camera Co., Dept. AG, 179 W. Madison Street, Chicago 2, Illinois.

KINE Exakta VX, f2.8 CZT preset, Immaculate, $209.90. Contax IIIa, f1.5 ctd, case, $261.00. Spotless. Free catalogue. 1001 bargains. Dealer's Mart, 54 Beverly Rd., New Rochelle, N.Y.

DISCOUNTS to 40%—cameras, projectors, tape recorders, lenses. Write for individual quotations, no catalogs. Classified Camera E, 2375 E. 65 St., Brooklyn, New York.

BUY wholesale nationally advertised cameras, photo supplies, thousands other products at big discount. Free "Wholesale Plan." American Buyer's, 629-S8 Linden, Buffalo 16, N. Y.

BARGAIN Prices on new and used photo supplies. Send 10c for latest catalog. Fotoshop, 136A West 32nd St., New York City 1.

ARGUS C-3, case, flash, Spotless, $48.98. Argus C-4, case, flash, never used, $73.81. Free catalogue. 1001 bargains. Dealer's Mart, 54 Beverly Rd., New Rochelle, NY.

20 TO 50% Discount everything. Photographic, giftware. Free catalogue. Dart, 3812F Atlantic Avenue, Brooklyn 24, N. Y.

NEW Dejur '750' Projector $105.90. All radiant screens 30% off. Terrific savings, photo equipment, appliances, typewriters. Free catalog. Camera Shoppe, Box 601-A3, Mount Vernon, New York.

EFFICIENT—Inexpensive Repair Service. All cameras, movie cameras, binoculars. Free estimate. Modern Technical Supply, 55-PS-West 42nd Street, New York 36.

FREE! Free! Free! Central Camera Co., Photographic Headquarters since 1899, saves you money on all photographic equipment. Send for Central Camera Co.'s Free Photographic Bargain List today: Central Camera Co., Dept. 4-C, 230 S. Wabash, Chicago 4, Ill.

GE PR-1 Memory meters, $23.97 . . . Weston Master II's $21.47. Factory boxed. 10c for catalogue of 1001 bargains. Dealer's Mart, 54 Beverly Rd., New Rochelle, N.Y.

BUY Surplus cameras, developers, film, projectors, sound equipment. Hundreds others from government. List $1.00. Box 169-ACF, East Hartford 8, Conn.

PHOTOGRAPHERS Dream vacation—Free—Not a contest—Write for free details—Box 2015, Cincinnati 1, Ohio.

LENS Bargain: Brand new Steinheil Culminar 105mm f/4.5 in barrel with iris diaphragm. Regular $29.50 value. Ideal for camera or enlarger complete with mounting ring. Coated $14.95. Uncoated $12.95. Money-back guarantee. Lion Sales, Dept. S, 2500 Woodway Ave., Dayton 6, Ohio.

ARGUS C-3, case, flash, Spotless, $48.98. Argus C-4, case, flash, never used, $73.81. Argus 300w blower-cooled projector, case, $36.38. 10c brings catalogue of 1001 bargains. Dealer's Mart, 54 Beverly Road, New Rochelle, N. Y.

35 MUSIC, SONG WRITERS & RECORDS

WANTED! Poems for musical settings. Write Songwriters' Service, Clifton, N. J.

POEMS Wanted for musical setting. Send poems. Free Examination. Five Star Music Masters, 646 Beacon Bldg., Boston, Massachusetts.

SONGWRITERS! Protect your poems and songs! Don't mail anywhere! Write for safe procedure! Song Service, 333 W. 56th, Dept. F.S., New York 19, N.Y.

FREE Records of your song—Your words—My Melody. Free information. Johnny Mack's Melody Mart, 1094 West 39th Street, Dept. K, Los Angeles 37.

POEMS Wanted to be set to music. Free examinations. Send poems. McNeil Master of Music, 510-PS, S. Alexandria, Los Angeles, California.

POEMS Wanted for musical setting. Send poems. Free examination. Crown Music Company, 1472-P Broadway, New York City 36.

POEMS needed for new songs. Send poems for free examination, details. Immediate consideration. Songcrafters, 2724 Arcade Station, Nashville, Tenn.

SONGWRITERS: Large recording company may record your song. National sales and promotion if selected. No Charge for Melodies. Send song material to Music Makers, Dept. G-8, Box 2507, Hollywood, California.

POEMS—Urgently needed to set to music! Write clever poems, catchy rhymes. Achieve Fame, Money in popular music field! Send sample poems. Free evaluation. TinPan Alley, 1650 Broadway (Dept. L), New York 19.

SONGWRITERS! Send poems, songs. Music Service, 242 West 72nd St., PS, New York 23.

SWISS Music boxes. Special tunes to order. Spielman, 131 West 42nd, New York 36, (CH 4-1995).

COLLABORATE With hit songwriter—Words or Melody. Joe Liggins, 1840 East 124th Street, Compton, California.

ACCORDIONS—Buy direct from importer—save 50% and more. Five days free trial; lifetime guarantee. Trade-ins accepted. Big color catalog free. Write today. Accordion Manufacturers & Wholesalers Outlet, Dept. 45-P, 2002 West Chicago Ave., Chicago 22, Illinois.

POPULAR Songs. How to write and sell them. Write for free booklet Successful Songwriting. Gateway Songs, Box 2470, Hollywood 28, California.

PHONOGRAPH Records 20c. Catalogue. Paramount, SA-312 East Market, Wilkes-Barre, Pa.

SONGS Into $$$$$$$$$$—Share $29,785,899.00 each year for new songwriters, songpoets. Songs composed, published, promoted by largest firm. Information, appraisal Free. Postcard or copy to Nordyke Publishing Co., 7070 Hollywood Blvd., Hollywood 28PS, Calif.

SONGWRITERS—Poemwriters—Save money; heartaches; disappointments. Free catalog. Prevue—536 E. 5th St., New York City 9.

CHORDS & shorthand. $1. Stackpole, 2110-12 West Venango, Phila. 40, Pa.

1955 ACCORDIONS — Wholesale. Free catalog. American Accordion Center, PS-4, 5329 Belmont, Chicago.

36 RADIO, TELEVISION, SUPPLIES & EQUIPMENT

MAKE Simple, Tubeless, Batteryless, Distance-Getting radio. Genuine Melomite crystal, Detector, Illustrated instructions, 50c postpaid. Allen, 427-PS5, Clinton, Mo.

TV Trade-in sets. Philco, R.C.A., Emerson, others. List available. 10"—$17, 12" to 17"—$20 up. Washtek Service Co., Dept. S, 1501 Boston Road, Bronx, N. Y.

BUILD Super crystal radios. Electrotomic crystal, detector, instructions 50c. Electrotomics, Box 98S, Dixon, Missouri.

PRINTED Circuit Kit—All materials, equipment and instructions for designing and etching your own boards. Satisfaction guaranteed—$19.55 postpaid. Tele-Diagnosis, 155 West 72nd Street, New York 23, N. Y.

BUILD 15 Radios—Progressive Radio "Edu-Kit" only! $19.95 complete. Free Radio Tester, Electric Soldering Iron. No experience required. 30-day unconditional money-back guarantee. Order direct or send for free descriptive literature—no obligation. Valuable Radio & TV Repair Guide sent on request—no charge, no obligation. Progressive "Edu-Kit" Inc., Rm. 28-A, Progressive Bldg., 497 Union Ave., Brooklyn 11, N. Y.

GEIGER Counter and Metal Detector Kits. Inexpensive, Educational. Free Literature. Electronic Applications, Dept. A, 5024 Lee Hwy., Arlington 7, Va.

TV Tube trouble information and location chart. Locate defective tube by picture tube screen. Send $1.00 with make and model of your set. NW, TV Specialties, Box 1013, Seattle 11, Washington.

STANDARD TV radio tubes. Terrific savings fully guaranteed. Send for price list. Allied Electronics, 74K Cortlandt Street, N.Y.C.

CRYSTAL Radio Experimenters. Write Leslie Hulet, 305 Hope, Lakewood, New Jersey.

GOVT. Surplus electronics, radar, transmitters, receivers, components, from 35c. List 3c. Meshna, 580 Lynn, Malden 48, Mass.

MAKE simple powerful distance-getting crystal radio. Works anywhere. Illustrated booklet fifteen cents. Money back guarantee. Francis, Box 5963, Cleveland, Ohio.

NEW, Exciting radio TV items. Increases pleasure, saves money. Free details. Capcon, Inc., 25-PS Willett Street, New York City 2.

COMPLETE set of parts to build "Loopstick" Crystal Radio Kit. Finest, most sensitive yet designed. Complete with instructions. $2.95 postpaid. TV Sales Company, Dept. S, P.O. Box 44, Yonkers 1, N.Y.

HI-FI Stroboscopic Disc and instructions. Send 25c. Sela Company, 128 W. 48th St., New York 36, N.Y.

GENUINE Scotch recording tape. 1200' —regularly $5.50—Special $4.29. Three rolls $11.75 postpaid. Bronxville Camera Shop, 94 Pondfield, Bronxville, N.Y.

WALKIE-Talkie. Build a real wireless two-way portable radiophone for less $10.00. Plans 50c. Springfield Enterprises, Box 54-A4, Springfield Gardens 13, N.Y.

ENJOY Color television now! Non-inflammable multicolor screens for all black-white sets. Easily attached. Complete details. Free. Zingo Products, Johnstown 98, New York.

SUPER Pocket radio. Owners report coast-to-coast reception. Complete kit $2.99. Batteries $1.10. Tiny hearing-aid earset $2.95 or use any regular headphone. Will ship C.O.D. with $1.00 deposit. Rush order to-day. Satisfaction guaranteed. Transi-Mite Labs, Manteo, North Carolina.

37 BUSINESS OPPORTUNITIES

START A Buying Service, buy wholesale thousands nationally advertised products. Make big profits selling at sizeable discounts. Postcard brings details. American Buyers', 627-S Linden, Buffalo, N. Y.

LEARN Sewing Machine Repair, Rent, Trade, Sell, Service. Operate "Booming" Home Shop like others do. Zigzag machines and supplies furnished. Free details. Taylor Service, Box 2126, San Bernardino, Calif.

IMPORT-Export! Opportunity, profitable, world-wide, mail-order business from home without capital; or travel abroad. Established World Trader ships instructions for no-risk examination. Experience unnecessary. Free details. Mellinger, E691, Los Angeles 24.

RECAST old batteries into new. Latest achievements. Battery Laboratories, Minneapolis.

FIX typewriters. Free booklet describes our modern, inexpensive home-study course. Factory methods taught. Write Typewriter, Building 4, Tarentum, Penna.

WE Love our mailman—He leaves over $1,000.00 monthly in our rural mailbox. My college professor husband drafted a scientific home mailorder method. We bought a Texas ranch, live as we always wanted. Now we sell the "Ranch Mailorder Method." Operates anywhere. Inquire: Eveningshade Ranch, Helotes, Texas.

VENDING Machines—No selling. Operate a route of coin machines and earn amazing profits. 32-page Catalog Free! Parkway Machine Corporation, Dept. 73, 715 Ensor St., Baltimore 2, Maryland.

FREE! "301 Profitable Small Businesses!" Amazing shoestring plans! Work Home! Start Sparetime! Deumant Surveys, Kenmore, 23-T, New York.

$1,000 MONTHLY possible in collection agency business. Free details. Write Cole Associates, Syracuse 2, New York.

ESTABLISH Automatic shoe shine route. Jiffy Shine, 1630 South Second, Phila. 48, Penna.

GROW Orchids at home—profitable—fascinating. Year 'round. Maine to California. No Greenhouse. Gorgeous Cattleyas, Cymbidiums, etc. Successful home grower shows you how. Free—full details. Flowerland, 4622-TX Wilshire, Los Angeles 5.

OPERATE profitable mail order business. Write Walter Service, 4159-B East 112th, Cleveland 5, Ohio.

MEN Wanted—Build Luggage And Cases At Home. We sell your products—supply complete instructions, materials, everything. No special equipment needed. Free details. Casecraft 805-H4 Sunset, Los Angeles 12, Calif.

$25 WEEKLY working two hours daily at home. Lycke, Box 2471-B, Cleveland 12, Ohio.

BRONZE Baby Shoes. Instructions, Equipment and mouldings for genuine electroplated process. Free catalog. Hollywood Bronze Supply, Dept. B-1, 1624 East First Street, Los Angeles 33, California.

ENVELOPES addressed accurately, reasonably. Fast service. We have capable addressers in your city. Glenway System, 5713 Euclid, Cleveland 3, Ohio.

NEWEST Spare, Full-Time Home Business. $5 to $10 hour possible. Paint with suede—the finish with touch And eye-appeal. Beautify auto dashboards, signs, radios, toys, figurines, lamps—1001 others. Complete, Step-By-Step Instructions sent for no-risk examination. Free details. Coast, Los Angeles 61.

MEN.—Income from local information. No selling. Neherco, LaVerne 6, California.

NEED More Money To Live on? Increase your weekly income $20 to $25 or more in spare time. Supply Rawleigh Products to Consumers. Also openings for full time Dealers. Write Rawleigh's, Dept. D-DD-PSC, Freeport, Ill.

MAKE extra money. Address, mail postcards. Spare time every week. Write Box 14, Belmont, Mass.

BOOKKEEPERS. Increase earnings operating sensational bookkeeping service. Kern, 5632B Lankershim, North Hollywood, California.

MAKE Money At Home as renewal headquarters for all magazines. Liberal commissions. No experience—no capital needed. Supplies furnished. Write for Free Catalog. McGregor Magazine Agency, Dept. 510B, Mount Morris, Ill.

BE appointed state notary public now. Write—Stationers, Helotes, Texas.

MAKE Big Money At Home! Invisible Reweaving pays up to $10.00 profit in an hour. Make tears, holes disappear from fabrics. Constant demand from laundries, cleaners, homes brings steady earnings. Details Free. Fabricon, Dept. AF, 8342 S. Prairie, Chicago 19, Illinois.

I Average $125 weekly selling books by mail! So can you! Start sparetime! Work home! Cooper, 247-T Taunton, Buffalo, N.Y.

MINIATURE Trees. Why pay $2.00—$10.00 for growing secrets? Free Details. Tiny Trees, 5038 N. Winthrop, Chicago 40.

BRUSH Plating outfits connect to a battery, no tanks necessary. Your opportunity to make good income silvering mirrors, plating articles in the shop and home at low cost. Free particulars. Gunmetal Co., Ave. E, Decatur, Illinois.

LIQUID Rubber makes flexible molds. Free Sample. Chaney, 1130 E. 16th St., Jacksonville 6, Fla.

GROW Herbs & Spices (50 different kinds!) at home for fun or profit. Millions $$ worth used yearly in foods, drinks, cosmetics, perfumes, medicines, etc. Help fill huge demand. Successful home grower shows you how. Free—full details. Herb Land, 601-M So. Vermont, Los Angeles 5, California.

ADVERTISING book matches—Cash in on big demand—sell Union Label matches. Cuts for all businesses and political parties—Free powerhouse selling kit—low prices—protection guaranteed on repeat orders—Cash commissions. Superior Match Co., Dept. PX-455, 7530 Greenwood, Chicago.

BREED Rare Tropical Fish at home. Earn Big Money! Learn Secrets! Help fill huge demand. Amazing Opportunity! Free Plan. Tropical Fish Breeders, Los Angeles 61, Calif.

HOW and where to obtain Capital? Free details. Star Service, Wapakoneta, Ohio.

WHOLESALE! Huge selection, famous brand products. Sensational discounts! Large catalog. Unusual business plans included. Consolidated Distributors, 21-15, Lafayette, Paterson 15, New Jersey.

AIM Your sales high in '55—Earn $10,000 a year selling a repeat, volume product. Write Hi-Lite Corp., Dept. PS, Cincinnati 19, Ohio.

BUY Wholesale, nationally advertised merchandise. Unlimited wealth of opportunities on credit. Sell on easy terms. Encore Industries, Dept. 212, Box 247, Midland, Mich.

700% PROFIT Taking and finishing one minute photos with wonderful camera. PDQ Camera Co., 1161 N. Cleveland Ave., PS, Chicago, Ill.

MINK Raising information free. Complete. Lake Superior Mink Farm, Superior E E5, Wisconsin.

MAIL Circulars. 100% commission. Free details. Fisher's, Dept. S4, 4756 So. Central, Los Angeles 11, California.

GROW Mushrooms, anywhere, anytime, for business, extra cash, hobby. Mushroom Lab. 32"A Kendrick St., Lawrence, Mass.

YOUR Own name brand business. No investment; no inventory. Part time or full time. Sell famous brands of appliances, housewares, silverware, radios, vacuum cleaners, lamps, tools, clocks, watches, jewelry, etc., etc., over 1,000 items. Join thousands of successful independent dealers. Send for Free catalog and dealer price list. H. B. Davis Corp., Dept. F, 145 W. 15 St., New York City.

DOLLARS: Baby record books, Kitty Kat shoes, Hollywood souvenir cards, eleven thousand new prospects daily, sold by mail, use our literature. No-Co-Ro, Oakland 6, California.

WHOLESALE! 40% to 80% off! Hundreds of items. Cosmetics, plastics, waxes, polishes, brushes, housewares. Mail Order Supply, Box 2022 Uptown, San Bernardino, Calif.

MIAMI—Business Opportunity and Help Wanted ads both airmailed immediately $1.00. Minimum of 300 listings guaranteed. Miami-Ads, 321 189th St., Miami Beach 41, Fla.

BECOME A game warden, professional hunter! Join forestry, park, fishery services. Good pay! Opportunities open! Free! —revealing "Select-Job Chart," details, job-getting secrets. Write "Home-Study Institute" AL, Los Angeles 19, California.

WOMEN! Sew ready-cut neckties at home. No experience necessary. No selling. No machine needed. Details free. Neckwear Supply, P. O. Box 2066-S, Inglewood 4, Cal.

MAKE Money growing miniature trees on your window sill. Free seed and plan. National Nursery, Dept. GC, Inglewood 4, Calif.

FREE booklet "Money Making Facts" tells mechanically-inclined men how to start sparetime business at home. Charles Foley Company, Columbia Heights, Minn.

REPAIR Dolls; make rubber stamps. Catalog "60 Ideas" Free. Universal, Box 1076-B, Peoria, Illinois.

"MAKE Perfumes," other products—Sell mailorder—Formula Catalogue Free. International, 6347 Parnell-PS-4, Chicago 21, Illinois.

START venetian blind laundry, patented machine. Free information. LC Company, 522 N. Rural, Indianapolis 1, Indiana.

THRILLING Profitable Home Business. Make fast-seller chenille monkey trees, dolls, flowers. Terrific holiday demand. Information free. Velva, Bohemia 17, N. Y.

NATURAL molding rubber, extra thick. Free sample. Flock, W. Wooley, 115-B Donald, Peoria, Illinois.

PRINT for Profit at home. Amazing new method prints colorful posters, banners, greeting cards, glassware—anything. Hundreds at time. No press needed. No art. Fantastic profits! Need representative your area immediately! Free home-business plan. Screen-Print, Dept. PS-4, Los Angeles 61, California.

TO $50.00 weekly. Sparetime, home operated mailorder business. Successful "Beginner's" plan. Everything supplied. Lynn, 10420-C National, Los Angeles 34, Calif.

$70 WEEKLY Guaranteed—home, spare time. Simplified mail Bookkeeping. Immediate income—easy! Auditax, 34651DJ, Los Angeles 34.

$200 WEEKLY Cleaning Venetian Blinds. Free book. Burtt, 2434B, Wichita 13, Kansas.

LEARN to sell by mail. Inexpensive course reveals how. Ranse, Box 1719-D, Richmond 14, Virginia.

TRADE-Business-Vocational-Diversion Magazines. Late copies. Get-acquainted service. More than 3,500 publications—all fields. Current list Free. Commercial Engraving Publishing Company, 348 North Ritter, Indianapolis 19, Indiana.

GROW Mushrooms. Cellar, shed, and outdoors. Spare, full time, year round. We pay $3.50 lb. We paid Babbitt $4,165.00 in few weeks. Free Book. Washington Mushroom Ind., Dept. 178, 2954 Admiral Way, Seattle, Washington.

DISTRIBUTORS—Large Profits. Terrific Repeat Orders. Unique Italian Brooms. Details free. Write P. S. Peacock, 915 Bryant Street, San Francisco, Calif.

AN Impressive letter of application to a prospective employer can land you a good job. Send 50c for five adaptable letters and instructions. Apps, Box 172, Fond du Lac, Wisc.

FORTUNES Made raising crickets and fishworms. Write for free information. Carter Worm Co., Plains, Georgia.

$80.00 WEEKLY. Operate our selective mailorder business in your area, sparetime. House of Plastics, Sales Division, Paramus 7, N.J.

BUY Anything wholesale save 20c to 75c on every dollar spent, write for free details. Mid-Western Distributors, Marion, Ohio.

"MAGIC Secrets of Wheat Trading," complete course, Pugh's Publications, Ambass. Station, Los Angeles 5, California.

$1,000 MONTHLY, home, mailorder, free advertising method. Revealing information. Seidel, 6000-B Sunset, Los Angeles 28.

OPPORTUNITY Mails three months 25c Donovan, 793 Greenbelt, Levittown, N.Y.

OPPORTUNITY Seekers names none over 60 days from our advertising in magazines; All seeking ways to make money at home. 500 $5.00, 1,000 $8.00. Typed on gummed labels. Try 1,000. You will be back for more. Ken-West Distributors, 7-T South Harlem Street, Worcester 4, Massachusetts.

FREE Wholesale catalogue! Famous brand appliances, cameras, watches, etc. M.B.S., P.O. Box 252, Chicago 17, Illinois.

N.Y. Classifieds airmailed $1. Valentine, Box 493, White Plains, N.Y.

CINCINNATI, industrial center, jobs, homes, apartments, farms; complete Sunday paper classified section listing all, air mailed $1.25. Arthur's Service, 7367 Clovernook, Cincinnati 31, Ohio.

START your own Pet Shop. The most fascinating and money-making hobby of all. Send 25c for particulars to "Nature At Home", 4001 West Pico, Los Angeles 19, California.

EARN money at home. No canvassing. All business by mail. Publication fully describes 12 proven ways including making $250,000 in three years. 50c postpaid. Satisfaction or refund. Newman, Box 322-S, Penticton, B.C., Canada.

THINKING of going into cafe, diner business? Be successful—Prepare yourself first! Home training course covers how to start, menus, foods, equipment. Free details. School of Restaurant Arts, BU44, Fremont, Ohio.

MAILORDER your opportunity to security and Independence. Work home, sparetime. Free details. Universal, 3067-p Gable, Grandville, Michigan.

TURN Newspaper clippings into surefire sellers. Sheridan, Box 467, Ulete, Fla.

MONEY in new greaseless doughnuts. Start in kitchen. No smoke. Sell stores. Free recipes. S. Ray Co., 3605 South 15 Ave., Minneapolis 7, Minn.

PROFITABLE! Bronzing baby shoes. Instructions. Mountings. Foster, 1520 Ardmore, Chicago.

SELL Religious items, jewelry, automotive items by mail. We furnish everything —Fill orders. Eastern, Box 142B, Dorchester 24, Mass.

FRANCHISE opportunities nationwide! Secure profitable distributorship, dealership, agency. Information rushed. National Franchise Reports, R-810, 920 North Michigan Avenue, Chicago 11, Illinois.

MAKE flexible molds. Cast plaques, figurines. Free sample. Tooker, 630-A Chestnut, Hamilton, Ohio.

NEW Exceptionally Profitable plans. Ideas for home operated mail business. Ruan name. Miller, 1881-R Roxbury Road, East Cleveland 12, Ohio.

HAVE Home Mail Business—Get $10 Orders in Every Mail—Keep $8.00. Everything furnished. Hutchinson, Box 87-C, Dorchester 22, Mass.

WINNING Mail order plans. Merchandise, books. Details free. Mid - State, Box 214-K, Syracuse 1, N. Y.

MAKE Money helping others get out of debt, stop garnishments, save jobs, reestablish credit. Particulars free. Borum, R7, 411 West Walnut, Kalamazoo 42, Mich.

ELECTROPLATE autoparts, novelties, mirrors, baby shoes. Easy, inexpensive home processes. Free booklet. Tyco Metals, Box 13231-CQ, Houston 19, Texas.

WANTED! Home Producers, by manufacturers in our Clearing House Service. Become subcontractor, casting plastic products for these companies. Thousands of easy-to-make items required for consumer-industrial use. Cash in at home, without previous experience. Plastic Service Associates, Dept. 4-PS, East Boston 28, Massachusetts.

$4,000.00 PROFIT in two months. No investment. Details 50c. Charles Company, 12-EDG, Norwood, Ohio.

MAILORDER Business, start, operate, your own profitable business at home. Essential Information for Success. Only $2.00. Publisher, Liggett-Petty, 3005 Wayne, Kansas City, Mo.

EARN $2.00 hour! I do—making Sandals. Youngs, 1308-PS, South First, Arcadia, California.

PROFITS unlimited in your own Wholesale Buying Service. Buy 66-2/3% less than retail famous Appliances, Homewares, Jewelry, Sporting Goods, Furniture. Big profits selling friends at discount. Free details National Buyers Service, Box 426FA, Oakland, Calif.

MAKE Money in landscaping—Start your own business, part or full time. Many good paying positions open. Earn while learning. Send for Free Book. National Landscape Institute, Dept. M-43C, 310 S. Robertson Blvd., Los Angeles 48.

WANT Up to $100.00 weekly deposited in your mail box? Details free! Aldensmith, 2708-S Ladera, San Bernardino, Calif.

BIG profits in your own wholesale merchandising business. No investment! No inventory! America's greatest wholesale Appliance, Homewares, Jewelry, Sporting Goods catalog. Save yourself 66-2/3%. Space for your own name. We drop ship! Free sales plan. General Wholesalers, Box 3058FC, San Francisco.

EARN Money at home easily, details $1.00. Michelle, 231 Columbia Circle, Ephrata, Washington.

$4.20 BUYS dozen $1.50 guaranteed fire extinguishers. Scheall, 263, Duluth, Minn.

OPPORTUNITY To earn $15,000 or more annually. Business of your own. Self-employed. Franchise protected and guaranteed. Live at home. No merchandise to buy. One of the most exclusive and noncompetitive businesses in United States and Canada. Send for free explanatory booklet. Harrell & Company, Box 8-D, Louisville, Illinois.

MAKE Money selling Peps-It, the miracle cesspool and septic tank cleaner, deodorizer. Peps-It saves pumping, digging and expensive rodding. Retails $2.50. Costs you $1.00. Attention hardware and grocery stores. Electric Sewer Cleaning Co., Boston 34, Mass.

SAVE 20% to 50%. Buy wholesale! Nationally advertised merchandise. Free details! Beecher Sales, Box 2161-E, Cincinnati 1, Ohio.

BUY Wholesale thousands items. Lists Free. Cottage Industries, Omaha 12, Neb.

PLASTERCRAFT molds, liquid rubber, plasters, flocks, candle supplies. Catalog and manual free. Jayhawk Plasters, Blue Rapids, Kansas.

POPCORN and Potato Chip Equipment. Eakins, Box 933-B5, Springfield, Ohio.

MAKE Durable building plastic, easily. Beautiful, tough—101 uses—exclusive district—Unlimited demand—800% profit. Bays Laboratory, Oklahoma City 9.

MAKE Money at home. Mail letters featuring select merchandise. Get $10. orders in every mail. 100% profit. Everything furnished. Write: Nu-Way Enterprises, P-Box-747, Detroit 31, Michigan.

YOU can be president of your own company with no capital or experience. Free booklet "Ten Ways To Make Money in Your Own Business" shows you how. We ship orders under your name. Topval, Lindenhurst 121, New York.

FREE Folio "Up to $45,000; Unlimited Vacations." No merchandise, equipment. Unknown! Work home—sparetime! Haylings-815, Carlsbad, Calif.

$26,500 SALES in two weeks! Amazing radio-mail order method. Free details. Broadcast Service, 1412-J Great Northern Building, Chicago 4, Ill.

WOULD You devote full time to a business offering $20,000 per year? Details free. Write H. C. Brown, Box 3003, San Angelo, Texas.

MONTHLY repeat business which you can operate in your own community. For free details write Grasak, 321—28th Street McKeesport, Pennsylvania.

COLORGLAZED Concrete pottery made without molds. Patented method. Cemetery products, novelties, tiles. Basement leak-sealing. Money-making projects Booklet, details free. Men only. National Potteries, Grand Rapids, "Minnesota."

BUY it wholesale Manufacturers. Distributors. Over 850,000 items. Literature free. Olsen 1231-B East Third St., Duluth 5, Minnesota.

OPERATE "Escolator" Mailorder System, selling our products or any products. Most revolutionary mailorder system known. Write: Selbyco, Decatur 167, Ill.

FREE, "How to Build Your Own Mail Order Business," with year's membership to Opportunists Mail Club. Receive hundreds of selected money-making propositions, business offerings. 25c year. Money back guarantee. Storm Associates, Cedarville, N. J.

PROFITABLE Home collection office. Experience unnecessary. Particulars Free. H. Hyatt, 411 West Walnut Street, Kalamazoo 42, Michigan.

EASY handwork makes fast-selling useful articles. Sample free. Sunmade Company, Brockton 64, Mass.

MONEYMAKING mailorder business plan, free! Write: George Lenhoff, Lincoln 1, Nebraska.

OPPORTUNITIES! Self-Helps! Home, Business, Mailorder. Mailtrader, Box 643, Ann Arbor, Michigan.

HAVE Home Business. Addressing-Mailing. Get Orders In Every Mail. Everything Furnished. Mednis, 10 Port Norfolk, Boston 22S, Mass.

$46 FROM Square Foot Plywood; Jigsaw necessary. Write: Woodart, Bridgewater, Mass.

$250 WEEK reported! Free book "505 Odd, Successful Businesses." Work home! Expect something Odd! Pacific-36C, Oceanside, California.

PERFUME Concentrates, cosmetic materials, goldcote bottles, fillers. Parrand Chemical, Tyrone, Pa.

MAKE Perfumes other profitable products Home. "Carelabs", 1914 Chouteau—PS45, St. Louis 3, Missouri.

FAST Selling mailorder item. Three selling plans, circular, sales letters and sample $1.00. Gordon Products, Box 1022A, Syracuse 1, New York.

SELL Brake fluid. Excellent profit. Loreman Products, Salisbury 6, Maryland.

MONEY Fast. Special tools—experience unnecessary. Up to 300% profits in plastic. $1.00 for material and instructions. Plasti-Kraft, Box 9383, Philadelphia 39, Pa.

OPERATE Your own profitable mail order business. Write Baker's, Box 61, Canton, Ohio.

UNUSUAL Home mailorder business. Fascinating, clean, profitable. Ready to operate. Angora House, PSM2, Springfield, Illinois.

DO It with "Floating Henryburgers." Over four million sold. State type of place or present occupation. Box 936, Wichita, Kansas.

"DOLLARS In the Mail." The real secrets of mail selling. 68 page copyrighted book and one year consultation certificate, both for only $2.00 postpaid. Satisfaction guaranteed. The Gerwigs, 366 South Huron, Columbus 4, Ohio.

MAKE Money by mail! Red-Hot book, merchandise deals. Everything furnished. Rush name. National, Box 88, Dorchester 22B, Mass.

EARN extra money weekly mailing circulars for advertisers. Complete instructions —25c. Siwasilan, 4317-B Gleane, Elmhurst 73, New York.

NEWSPAPERS. Turn them into cash. Eighteen methods. Instructions 50c. Charles Company, 12-EDF, Norwood, Ohio.

RESEARCHING for Information Brings $7.00 Hourly! James Cutler Publishers, Reading, Pennsylvania.

PARTNERSHIP Information. How to start. Withdraw. Oust unwanted partner. Particulars free. Reynard, Box 1265-C, Peoria, Illinois.

50% PROFIT on every Sale. Establish your own business. Merchandise Guaranteed. Details free. Martin, 1233 South Whittier, Indianapolis 3, Indiana.

INCOME Increaser. Opportunities Chronicle 25c. McPlastens, 609PSM West First, Los Angeles, Calif.

37A CLAIM INVESTIGATORS

INVESTIGATE Accidents! Many earn to $10,000 yearly. Thousands of fire losses, auto accidents, burglaries, collisions must be investigated for insurance companies, airlines, steamship lines. Excellent openings for trained men as Company Investigators. Also big opportunities in your own independent business. Train home spare time. Placement counsel and help. Free Book—Now! Universal Schools, Dept. B-4, Box 8202, Dallas 5, Texas.

38 MONEYMAKING OPPORTUNITIES

FREE, "101 Profitable Small Businesses!" Amazing shoestring plans! Work Home! Start Sparetime! Deumant Surveys, Kenmore 23-T, New York.

MAKE money addressing envelopes sparetime. Glenway, 5713 Euclid, Cleveland 3, Ohio.

WIN contest money. General Contest Bulletin gives hundreds of tips. Lists current contests and rules. Sample 25c. General Contests, 1609-A East 5th, Duluth, Minnesota.

SELL-buy Titania Gems. More brilliant than diamonds. $9.75 carat wholesale. Free Catalogue. Diamonite, 1404-S Mitchell, Oakland 1, California.

START A Buying Service, buy wholesale thousands nationally advertised products. Make big profits selling at sizeable discounts. Postcard brings details. American Buyers', 630-S Linden, Buffalo, N. Y.

EARN Ready Cash doing mailing work —No experience needed—Y Wilson Business Service, 2875 Glendale Blvd., Los Angeles 39, California.

PROFIT! Prestige! Publish a magazine under your own name! Only $3. per month! Sample, details 5c! Filmer, 910 Marion, Pharr 17, Texas.

DETECTIVES—Work home—Travel. Experience unnecessary. Detective Particulars free. Write Wagoner, P-125 West 86th, New York 24.

MAN Wanted—Are you dissatisfied with your work? Would you like a business of your own? If so, write Rawleigh's, Dept. D-GG-PSC, Freeport, Illinois.

MAKE extra money. Address, mail postcards. Spare time every week. Write Box 14, Belmont, Mass.

EARN Money at home! Must have good handwriting. Write for details. Atlas, Box 188-P, Melrose, Mass.

NEW 7"x11" Ultra-Blue Signs, 7c retail 50c. Sample free. Lowy, 812 Broadway, Dept. 857, New York 3.

WHOLESALE! Huge selection, famous brand products. Sensational discounts! Large catalog. Unusual business plans included. Consolidated Distributors, 21-17, Lafayette, Paterson 15, New Jersey.

HALF Million articles wholesale! Directory, 10c. Clifford German, Route 13, Tulsa, Okla.

SPARETIME Profits Taking Subscriptions. All Magazines. Wholesale Catalog Free. Cassell Publishers, Westfield, N. J.

FREE Course in locksmithing, picking, etc. W. Thompson, Box 738, Saratoga, Calif.

START Own business. Wholesale catalog 50c. Springers, 1141PS Broadway, New York.

MAKE Big money! Raise Albino rats and mice for medical and atomic research. Write to-day. G andG. Company, Box 8, Olyphant, Pennsylvania.

MAKE Extra money. 121 home methods. "Shoestrings To Fortunes." Completely new. $1.00. Brockway Plan, 1145 High, Topeka 2, Kansas.

$10,800 PROFITS! Your Own Mailorder Business! No risk! "Success Plan" Free! Treasury, 709 Webster, New Rochelle PS-25, New York.

NEW 1955 Lamp Parts Catalog showing everything you need to make and repair most types of lamps. Everything at lowest wholesale prices. Send only 25c today for both catalog and wholesale price list. Gearon Co., Dept. 503-A4, 27 S. Desplaines, Chicago 6, Ill.

BUY, Sell and swap for profit. Amazing new method. Inquire, Box 621H, Culver City, Calif.

LEARN How to double your money. Send $1.00 for full information write to Mr. H. Ehlenfield, 137 Belmer St., Buffalo 11, N.Y.

1000 MONEY Making and Saving Tips. 10c brings list. Sikora, Cornwells Hts., Pa.

SELL Merchandise by mail. Everything supplied. Big profits. Details 10c. Stull's Buying Service, 621 Adams Ave., Scranton, Pa.

THOUSANDS Items wholesale catalog $1, refunded first order. Opportunity 1 Sales, Box 142S, Basking Ridge, N. J.

ADDRESS envelopes at home. $25 weekly possible, sparetime. No selling. Temple Co., Box 946 Muncie 7, Indiana.

$35 WEEKLY addressing envelopes. Instructions $1, refundable. Adservice, Spring Valley 36, New York.

MONEY in sparetime Fixit Shop at home. Repeat cash business. Experience unnecessary. No selling. Free booklet explains. C. Foley Company, Columbia Heights, Minnesota.

ACME Saw sharpeners are the finest you can own. Don't be satisfied with less. Send for free literature. Max Mfg. Co., 138 Stockton Ave., San Jose 26, California.

GROW Mushrooms. Cellar, shed, and outdoors. Spare, full time, year round. We pay $3.50 lb. We paid Babbitt $4,165.00 in few weeks. Free Book. Washington Mushroom Ind., Dept. 179, 2954 Admiral Way, Seattle, Washington.

GROW . . . Earthworms, sell-breeding stock, . . . soil culture, fishbait, home business opportunity. Write, "Earthworms", Corona, California.

SEND A dollar for informative report "How to Find Uranium." Raymond Jensen, 28 Grant Ave., Fords, New Jersey.

LEARN cafe operating, managing. Be successful! Independent! Train at home. Course covers every phase. How to start, menus, foods, equipment. Free details. School of Restaurant Arts, MO44, Fremont, Ohio.

BECOME Finance Specialist. Big profits. Complete instructions. Stamp brings full details. Tucker Associates, 3633 Warder N.W., Washington 10, D.C.

MONEY—Where and how to raise for emergency or business use. 50 other priceless secrets answered for $1.00. Worth hundreds. Tech-Research, 634 Oak, Mt. Pleasant, Mich.

LEARN Technical metaphysics and insure your future. Easy, inexpensive correspondence course. Simplest method known. Diploma. Write: Premier College of Technical Metaphysics, 2532 McKenzie St., Vancouver, B.C., Canada.

HUSBAND-Wife successful in mail order business. Details free. Chas. S. Edwards, 5100A East Side Avenue, Dallas 14, Texas.

START Mail Order Business spare time —book "Doing Business By Mail" tells how. Every business scheme fully explained $1.00. Ken-West Distributors, 7-T South Harlem Street, Worcester 4, Mass.

MAKE Profitable fast moving automotive accessory drawings $1.00. Veale Mfg., Box 5, Columbus, Ind.

MERCHANDISE! Wholesale! Tools, appliances, jewelry, etc. Name brands. 64 page catalog $1.00. Refundable if not satisfied. Superior Supply Company, Box 2621, Paterson, New Jersey.

MAKE to $4.50 hour doing common pen lettering. National Artists, 801½-C North Marsalis, Dallas 3, Texas.

WANTED: Typewriter owners. Make handsome profits. Write today. Groves Company, 682 Hastings 3, Nebr.

$200. MONTHLY possible raising earthworms! Backyard, garage, basement. Complete illustrated booklet explains raising, feeding, packing, marketing. 25c postpaid! Ozark Worm Farm-V, Willow Springs, Mo.

EARN Money evenings, copying and duplicating comic cartoons for advertisers. Adservice, Argyle 2, Wisconsin.

BUY name brand tools wholesale. Sell fellow workers, friends, etc. from big illustrated 1955 coded catalog. Send $1 today refunded first order. U.S. Supply, PS2, 149 Church, New York 7, N. Y.

EXTRA Money addressing and mailing literature. Gul, 2419 Thomas, Chicago 22, Ill.

BUY wholesale direct! Save yourself up to 66-2/3% on nationally advertised Appliances, Homewares, Watches, Cameras, Sporting Goods, Giftwares. Big profits selling others. Free illustrations. Wholesalers Mart, Box 6125FD, Houston, Texas.

GIANT Mails — Moneymaking Offers. Send 25c Today! Wrede's, Atkinson, N. C.

WANT to go in business for yourself without capital? We show you how. Postcard brings all details free. Topval, Lindenhurst 122, New York.

BUY Wholesale. Make save money catalogue $1.00, refundable. Roc-Jem Distributors, Bunker Hill, Illinois.

MONEY From names! Instructions $1.00. Maxwell, 2938-Oak, Bettendorf, Iowa.

BIG Profits and savings for you. Right from your own home. No canvassing or investment needed. Send $1.00 for large catalog and details. $1.00, Refundable. Kurcz, 7131 Deveny Ave., Cleveland 5, Ohio.

CAST Metal yourself, free literature, Castings, Box 124, Lynwood, California.

EARN Weekly mailing for national concern. I do-details 10c. Jimenez, 918 Calle Francita, Tucson, Ariz.

FREE Folio "Up to $45,000; Unlimited Vacations." No merchandise, equipment. Unknown! Work home—sparetime! Haylings—816, Carlsbad, Calif.

WHOLESALE Thousands of Nationally Famous Products. Big Discounts. Large Catalog $1. Money Refunded First Order. T & L Distributors, Box 943, Kermit, Texas.

BUY Wholesale Nationally Advertised Mdse Discounts up to 80%. Catalog $1.00 Refundable First Order. Paul Sales Co., 196 Church St., New Rochelle, N.Y.

EXCEPTIONALLY Profitable Home Mailorder Business Plans. Lewis Bartlett, Richland, Georgia.

$100 WEEKLY, spare time; novel, successful advertising plan; no investment. Herco-A, 319 Sea Street, Quincy 69, Mass.

FREE Book "505 Odd Successful Businesses." Work Home! Expect something Odd! Pacific-35C, Oceanside, Calif.

MANUFACTURE Rhinestone and Pearl Jewelry at home. Latest creations, tremendous profits, no skill needed. Postcard brings illustrated catalog of settings, stones, etc. A. V. Cutt Co., Inc., 210-H Fifth Ave., New York 10, New York.

ALUMINUM Awnings. Sell yourself. Sell neighbors. Factory prices. Write All Weather, Box 10254, Tampa, Florida.

GET Into your own big paying Weatherstrip business. -E-Z-On- 35, 1009 Harvard, Evanston, Ill.

EXTRA Money Every Week. Send for Free Catalog. Dealer prices on watches, home needs, jewelry, gifts, electrical appliances. Marshall Sales, 2016-PS Edmondson Avenue, Baltimore 23, Maryland.

38A INSURANCE INVESTIGATORS

YOU Can become an insurance investigator and adjustor in your spare time. Operate your own independent adjusting business. Start working after a few lessons. Send $2.00 for first lesson. Start now! Bureau Adjusting Service, Box 426, Chicago 90, Illinois.

39 FORMULAS, PLANS, ETC.

FORMULAS—All kinds. Latest products. Literature free. Kemico, Park Ridge 15, Ill.

COMMERCIAL Formulas—catalog 10c. George, Chemist, 5150 Wilton Pl., Los Angeles 62, Calif.

REAL Manufacturing Formulas Lists Free. Cumming, Chemist, Gordon Avenue, Syracuse 4, New York.

FREE Formula Catalog. Anything analyzed $55.00. Western Chemical, Salem, Ore.

FREE Formula list—anything analyzed. Northwestern Laboratories, 2316 Brown, Evanston, Illinois.

MODERN formulas for today's fastest selling big-profit products. Literature free! Miller, Chemist, 1517-A, Tampa, Florida.

40 PLASTICS

LEARN Plastics at home. Complete kit—$5.98 postpaid. Dime brings sample plastic, three experiments, full details. Plastic Projects, Box 5151, Detroit 35, Mich.

PLASTICS home-craft course for Men and Women. Tells and shows how to make hundreds of fast selling plastics products. All plastics and materials for 23 projects included in course. No special tools needed. Course pays for itself. Write for Free booklet. Interstate Training Service, Dept. D-2-D, Portland 13, Oregon.

PLEXIGLAS, Lucite sq. ft. (12"x12") cost 1/16" $1.14, ⅛" $1.50, 3/16" $1.85, ¼" $2.20. Add 10% for postage. Almac Plastics, 600 Broadway, New York 12, N. Y.

NEW Liquid casting plastic. Clear, colors. Embed flowers, insects, coins. Saw, drill, carve. Send 25c for "How to Cast with Liquid Plastic" and proved Success Plan showing how to make money at home. Castolite, Dept. D-102, Woodstock, Illinois.

VINYLITE. Price list sent free. Solomson, 46A Cornhill, Boston 8, Mass.

HIGH Profits—Jewelry, gifts, novelties. Free catalog. Pilot Plastics, 67-B Fulton, New York 38.

PLEXIGLAS sheets—cut to size—clear, all thicknesses—standard outdoor translucent colors. McClarin Plastics, P.O. Box 168B, Hanover, Pa.

PLASTIC Sheets, Rods, Tubes; etc. Free List. Plastic Supply Co., 2111 Olive St., St. Louis 3, Mo.

BUTTERFLIES locked in plastic lampshade material included in our complete catalogue. VanHorn Plastics, 1905 Ingersoll, Des Moines, Iowa.

PLEXIGLAS, Fiberglas, Polyester, Acetate, Vinylite. Fast service. Wholesale-retail. Catalog—15c. Gem-O'-Lite, Box 6862P, North Hollywood, California.

PLEXIGLAS, Lucite. Square foot cost 1/16"—$1.10, 1/8"—$1.45, 3/16"—$1.75, 1/4"—$2.15, 3/8"—$3.28, 1/2"—$4.38. Colors add 10%. Send 15% for postage. Aristocrat Plastics, Inc., 55 Clarkson St., New York City.

MIRACULOUS New Vers-Ac hardens itself in minutes. Handle like putty or pour in molds. Form bearings, threaded anchorings, nuts, model parts. Extremely strong. Hard as metal. Single unit $1.00. Vers-ac Mfg. Co., Broadway, Va.

41 CHEMISTRY & PHYSICS

NEW Idea chemical and apparatus outfits for home experimenting, photo-scales, microscopes, chemicals, biologicals, and laboratory supplies in small quantities. Catalog 25c. Established 1931. John H. Winn, 124B West 23rd St., New York, N.Y.

AMATEUR Chemists—Have you seen our monthly paper? No Charge. Write: The Amateur Chemist, Westwood, Lassen County, Calif.

SPECTROSCOPE For quick chemical analysis $3.00. Cutting Sons, Los Altos, Calif.

ILLUSTRATED Catalog: Chemistry, mineralogy, biology 20c. Tracey Laboratories, Evanston, Illinois.

GEIGER, Scintillation counters, calibrated for uranium. Catalog, 10c. Atomic Laboratories, Box 343, Berkeley, California.

"FUTURE Chemists of America." Home study for beginners. Exciting. Practical. First lesson 25c. Parkway Laboratory, R. #1, McKees Rocks, Pa.

NEW Catalog, lists, 25c. Laboratory Sales, Box 161-B, Brighton, Mass.

AMAZING New Book of Science, Experiments, Formulas and catalog of Laboratory Supplies. Only 25c. National Scientific Co., Dept. PS-4, 2204 W. North Ave., Chicago 47, Illinois.

CHEMICALS and apparatus for industrial, analytical and private laboratories. Catalog 25c. Dept. M-26, Biological Supply Co., 1176 Mt. Hope Ave., Rochester 20, N.Y.

EXPERIMENTERS Supplies catalog: 20c. Hagenow Laboratories, 2414 Clarks, Manitowoc, Wisconsin.

42 HELP WANTED

MAKE extra money. Address, mail postcards. Spare time every week. Write Box 14, Belmont, Mass.

OVERSEAS, Latin American, Alaska, Canada Employment Originator 1955 "Foreign Service Directory" Up-To-Minute Report on Military & Civilian Construction, Oil Companies; Aviation; Transportation; Steamship; Mining; Government Job Info. How-When-Where to apply. Listing Firms Hiring. $1.00. Global Reports, Box 884-S, Hollywood 28, Calif.

FOREIGN Employment. Construction Work. If interested in foreign projects with high pay, write Foreign Service Bureau, (Dept. P.S.), Metuchen, New Jersey.

CALIFORNIA jobs. San Francisco classified airmailed $1.00. Hubbard, Box 1442, Palo Alto, Calif.

PORTLAND, Oregon, help wanted column air mailed $1.00. Pacific Employment Information Service, Brightwood, Oregon.

SAN Francisco Selected Job Digest airmailed $1.00. Two weekly sequences free. Hoffmann, 880 Glen, San Leandro, Calif.

MONEY-making sensation; 100% duPont nylon stockings wear like original pre-war nylons. We guarantee 3 pairs to wear 3 months or replaced Free. Every woman wants them. Write for free Kit. American Mills, Dept. 463, Indianapolis.

SUNNY Tampa's largest Sunday help wanted section airmailed $1.00. Craigs, 4219 Barcelona, Tampa 9, Florida.

ADDRESSING Typing Materials furnished rush 25c. Hustlers Club, Alger, Mich.

N.Y.C. Help Wanted columns, large Sunday Edition airmailed $1.00. Box 2253, Paterson, N.J.

LOS Angeles help wanted columns airmailed $1.00. Menick, Box 2228, Whittier, California.

LOS Angeles help wanted columns airmailed $1.00. Art, Box 775, Inglewood, Calif.

FOREIGN U.S. jobs to $18,000. Many overseas countries, fare paid. Skilled-unskilled trades, office. Stamped self-addressed env. brings reply. Job Opportunities, Waseca, 2A, Minn.

INVESTIGATE Booming Foreign and U.S. Construction, Aviation, Oil Opportunities, for Trades—Truck Drivers—Laborers — Engineers — Supervisors — Many Others. Who to contact for highest paying jobs. To $1500.00 Monthly. Latest Copyrighted Reports covering over 52 Countries, including U.S., St. Lawrence Project, Spain, Far North, Alaska, South America, Europe, Canada, etc. Year exclusive registration and advisory service. Application forms. Unconditional Money-Back Guarantee of Satisfaction. Immediate Service. $2.00. Airmailed $2.25. (COD's Accepted). International Reporter, Box 1047-SN, St. Louis 1, Mo.

"NOW! Construction Workers Contact report." U.S., Alaska, Canada, Engineers, Clerks, Trades (Oversea Govt.), Sea Jobs. Only $1.00! Money Back Guarantee! Model Service, Box 777-P, St. Louis 1, Mo.

ALASKA!! Last American Frontier. $1.00 brings 1955 Business Directory & Government Map. Military & Civilian Construction, Homestead & Highway Facts. Mining, Aviation, Fur-farming, Grazing, Timber. Travel directions. Hot list of firms hiring. How-When-Where to apply. Alaska Opportunists, Box 92-S, Hollywood 28, California.

NEW Job catalog. 56 pages, illustrated. Pay to $240 weekly. Overseas, U.S.A. Detailed opportunities: truck drivers, office, construction, guards, laborers, Alaska cannery workers (hiring 12,500), clerks, others. Wages, overtime, conditions, transportation. Women's opportunities. Catalog, "Firms Seeking Applicants" bulletin, applications, complete, $1. Jobservice Publishers D-1, Stevensville, Montana.

$1300.00 MONTHLY for truck drivers. $1400.00 monthly for carpenters, electricians, plumbers, mechanics, $1200.00 for clerks and laborers. Full information and complete foreign listings, with current information on Spain, Korea, Australia, Alaska & Canada. $1.00. Current information on stateside projects, $1.00. Dept. 4-D, Opportunities Unlimited, 1110 Commerce Bldg., St. Paul, Minnesota.

FOREIGN And American employment!! High pay. Overtime work. Transportation expenses. Most all trades. Many average $1250.00 per month. Truck drivers, electricians, plumbers, carpenters, mechanics, clerks, laborers. Latest digest of firms to contact, application form, how-where to apply. Includes special report on big Spanish Base job!! Also oil, aviation and steamship contacts. If our service does not help you we offer money back guarantee. Complete list including one year registration and advisory service. Send $2.00 or C.O.D. plus postage. All replies sent same day order received!! Midwestern Services, Box 124-DA, St. Louis 5, Missouri.

YOUR Future? Consult classified columns—not crystal balls! Los Angeles area job opportunities, business opportunities and housing facilities. Current ads. $1.00. G. Publications, Box 33, Azusa, Calif.

DELAWARE Valley USA is the land of opportunity! Large Philadelphia Sunday Help Wanted columns airmailed $1.00. Weitzel, 163 Berkley Ave., Lansdowne, Pa.

LOS Angeles Times help wanted columns airmailed $1.00. Jolly, 5157 Chesley, Los Angeles 43, California.

ANCHORAGE, Alaska, Help Wanted Columns airmailed $1.00. Box 3022, Anchorage, Alaska.

ELECTRONICS Job opportunities. Company addresses $1. Trinletti, Box 126, New York 17, New York.

LOS Angeles help wanted ads airmailed $1.00. Letters remailed 25c. Box 104, south Pasadena, California.

INDUSTRIAL Cincinnati help wanted column airmailed $1.00. P. O. Box 1102, Cincinnati, Ohio.

DENVER Help and business wanted columns. Air-Mailed $1.00. P. O. Box 186, Penrose, Colorado.

AVIATION Jobs—Names and addresses of companies to contact. $2.00. Fitzgerald, Dept. A-19, 813 Countryside Drive, Wheaton, Illinois.

43 AGENTS WANTED

BUY Wholesale—25,000 items—Catalog 25c. Matthews, 1472-A7 Broadway, New York City 36.

AGENTS—300% profit selling genuine gold window letters; stores and offices. Free samples. Metallic Sign Letter Co., 431-E North Clark, Chicago.

BUY Wholesale thousands nationally advertised products at big discounts. Free "Wholesale Plan." American Buyers', 629-S Linden, Buffalo, New York.

YOUR own business—Suits $1.50; Overcoats 65c; Mackinaws 35c; Shoes 12½c; Ladies' Coats 30c; Dresses 15c. Enormous profits. Catalog Free. National, 1218-J South Jefferson, Chicago 7.

60% PROFIT On Cosmetics—Famous nationally advertised Hollywood Cosmetics pay 60%! Make $25 day up! Hire others. For free samples, details, write Studio Girl, Glendale, Calif. Dept. PS-45.

GOLD or Silver letters, numbers. Windows, Doors Trucks. 1" to 6". 500% Profits—Free Samples. Atlas-U, 544 West 79th, Chicago 20.

START Your Own Business On Credit. Your own boss. 1135 of our Dealers sold $5,000 to $30,000 in 1954. We supply stocks, equipment on credit. 200 home necessities. Sales experience unnecessary. Pleasant profitable business backed by world-wide industry. Write Rawleigh's, Dept. D-U-PSC, Freeport, Illinois.

ABSOLUTELY Free—Sales Kit. Increase your income. Send postcard today requesting kit showing new line, belt buckles with your name or personal initials, cap badges, tie clasps, choice 3000 different emblems. Hook-Fast, Box 1425PS, Providence, R.I.

MAKE extra money. Address, mail postcards. Spare time every week. Write Box 14, Belmont, Mass.

I Average $125 weekly selling books by mail! So can you! Start sparetime! Work home! Cooper, 245-T Taunton, Buffalo, N.Y.

GET New Shirt Outfit Free; make $90.00 weekly on 5 average orders a day. Famous quality Made-To-Measure dress and sport shirts at $3.95 up sell fast to all men. No experience needed. Full or part time. Write: Packard Shirt Co., Dept. 887, Terre Haute, Indiana.

ANYONE Can Sell famous Hoover Uniforms for beauty shops, waitresses, nurses, doctors, others. All popular miracle fabrics—nylon, dacron, orlon. Exclusive styles, top quality. Big cash income now, real future. Equipment free. Hoover, Dept. N-101, New York 11, N. Y.

30,000,000 WOMEN want amazing new Automatic Refrigerator Defroster. You sell 8 out of 10 on sure-fire Free Trial. $250.00 weekly profit not uncommon. Rush postcard for guaranteed plan. D-Frost-O-Matic, Dept. D-103, 173 W. Madison St., Chicago 2, Illinois.

INCREASE your income—Personal initialed buckles, belts, cap badges. Free information—Hook-Fast, Box 480 (PS), Roanoke, Va.

BIG Money making opportunity. Exclusive line work uniforms. Jackets, pants, shirts, coveralls. Advertising embroidered. Every business prospect. Outfit Free. Master Div., 330 Water, Ligonier, Indiana.

AMAZING Discovery, Master Glaze, puts brilliant glasslike surface on cars. Free sample. Information. Big commission. Master Glaze, Dept. 826, 7720 Harwood, Milwaukee, Wisc.

NEW Jobs open in selling! Send name, address for five free issues of Opportunity Magazine's money-making guide, listing hundreds of companies who'll pay you well, full or part-time. No experience needed. Opportunity, 850 N. Dearborn, Dept. 18, Chicago, Illinois.

WHOLESALE! Huge selection, famous brand products. Sensational discounts! Large catalog. Unusual business plans included. Consolidated Distributors, 21-16, Lafayette, Paterson 13, New Jersey.

HAVE Your own business, buy wholesale, make big profits. Free General Mdse. Catalog. Jay Norris, Dept. PS, 445 Broome St., New York.

MAKE Money giving away free hosiery! Introduce amazing nylon stockings (guaranteed against runs and snags) and men's—children's hosiery (guaranteed one year) by giving away free trial pairs regardless whether or not final purchase is made! Earn up to $3 hour spare time. Mail postcard today for free samples men's and women's hosiery with complete money-making outfits. Nothing to pay now or later. Absolutely no obligation. Kendex, Babylon 44, N. Y.

REMARKABLE High-Level Position. Big income, even spare time, with New 1955 Car as bonus! Amazing guaranteed nylons. Big demand. Write Wiknit, 2054 Wash., Greenfield, Ohio.

SALESMEN—Show America's leading Nationally Advertised line — Novelties, gifts, utility items. Big commissions advanced. Prospects everywhere. Steady repeats. Low prices, free literature—samples. Write: Charms & Cain, 407 South Dearborn, Dept. PS-45, Chicago 5, Ill.

WEDDING Invitations — Personalized napkins—Wholesale prices. Sperry-Print, Williamsport 54, Pennsylvania.

EASY Selling. Magnetic waitress pencils. Sample $1.00. Nicholson Products, 3403 Cahuenga, Los Angeles 27, California.

75c PROFIT On each dollar! Luxurious stainless steel tableware, guaranteed 50 years. Can't rust, tarnish or stain. Looks like sterling silver. 30, 50 and 75 piece sets, open stock, attractive chests. Write orders on commission or go in business for yourself. Use our catalogues with only your name. Have agents, others sell for you. Offer women set free for every two sets they sell to friends. Many other money-making plans. We can also ship under your label. Rush postcard for free catalogue, plans, etc. No obligation. Topval Corp., Lindenhurst 70, New York.

SENSATIONAL 10 Way Wrench. Rush $1.00, samples, guaranteed. Import House, Toms River, New Jersey.

SALESMAN To sell plastic glass insert. Fits any steel top car. Write for literature. Key Kap Co., Dept. S, Dayton 2, Ohio.

WHOLESALE Catalogue! Appliances, cameras, watches. Cam Company, 6806PS-20th Ave. Brooklyn 4, N. Y.

$1.00 PROFIT selling $2.95 photo enlargement offer. Allen Studio, Reigler Bldg., Little Rock, Arkansas.

CALENDARS, Advertising Novelties, Matches. All styles, including Religious. Varnished. 12 sheet. Girls. Hundreds of Advertising Novelties, Book Matches, etc. Fleming Calendar Co., Promotional Division, 6539 Cottage Grove, Chicago 37, Ill.

MAKE Money at home as renewal headquarters for all magazines. Liberal commissions. No experience—no capital needed. Supplies furnished. Write for Free catalog. McGregor Magazine Agency, Dept. 510A, Mount Morris, Ill.

POSTCARD Can put you in a fine business! Complete line of Air Cushion shoes. Big steady Commissions. No experience or investment needed. Send postcard for Free Outfit. Mason Shoe, Dept. MC65, Chippewa Falls, Wisconsin.

SHINE Cars wthout "Polish". New invention, lightning seller. Cars gleam like mirror. Samples sent on trial. Kristee 70, Akron, Ohio.

FASTEST Selling line out! Today every merchant needs our sensational low-priced business boosting Advertising Specialties. Average $20 per sale. Calendars, printed necessities triple your earnings. 25% cash commissions. Experience unnecessary. Free Sample Outfit. Willens, 2130 Gladys, Dept. 602, Chicago 12, Ill.

$150 A week—plus bonus—for only 4 orders a day! Sell America's leading bronzed baby shoes. Big cash commission. Every parent a prospect. Write today for Free Starting Outfit. Alice Ames, Dept. 12, Boston, Mass.

RUN A spare-time greeting card and gift shop at home. Show friends samples of our new 1955 All-Occasion greeting cards and gifts. Take their orders and earn up to 100% profit. No experience necessary. Costs nothing to try. Write today for samples on approval. Regal Greetings, Dept. 247, Ferndale, Michigan.

MAKE Money Introducing World's cutest children's dresses. Big selection, adorable styles. Low prices. Complete display free. Rush name. Harford, Dept. N5341, Cincinnati 25, Ohio.

"JIFFY" Whitewall tire cleaner. Amazing formula. Givens, 337-N, Orrville, Ohio.

A Salesman's dream! Share our profits with us! Wholesale! Thousands nationally advertised items! Tremendous discounts! Premiums! A.I.M. Co., Box 2002, Paterson, N. J.

GOOD Man Can make $3,000.00 next 90 days. Every house in town wants amazing NiLite glowing curbside house numbers. Automatic selling plan pays profits everyday. Write today for details Free. NiLite, 173 W. Madison, Dept. G-81, Chicago.

200% PROFIT selling our perfumes! Write for details. G&G Sales, Box 245, Everett, Washington.

CALIFORNIA sweet smelling beads, sensational sellers. Particulars free. Mission, 2328P West Pico, Los Angeles 6, Calif.

NEW Chemical discovery, Pro Auto Wax, easy way to car beauty. Free sample, information. Amazing profits. Burford Auto Finishes, 1660 20th Street, Santa Monica, California.

BEAUTIFUL Feather Pictures. 200% Profit! Free sample. Apartado 9036, Mexico 1, D. F.

MAKE Extra Money. Sell front door name plates to friends, neighbors. Retail $1.98—you make $1.00! Free selling kit. Modern Engraving Co., P.O. Box 194, Boston 14, Mass.

POWER Mowers—$42. Chain saws. Terms. Sales kit—Free. Farmco-PS, Excelsior Springs, Mo.

EXTRA Money every week. I'll send you full-size Blair household products on Free trial. Show them to friends and neighbors. You can make big extra profits. Write Blair, Dept. 55ND-2, Lynchburg, Va.

EARN $30. A day Showing Our Famous Boots. Part or Full Time. No experience necessary. Write for Free Sales Outfit. No Obligation. Jim Richards Shoe Co., Dept. 5, Wellesley Hills, Mass.

BUY wholesale direct! Enormous profits selling at discount friends, neighbors name brand Appliances, Jewelry, Homewares, Sporting Goods. Spare or full time. No experience or investment necessary. Free sales plan. General Wholesalers, Box 3058FH, San Francisco.

NEW Aerosol fire extinguisher. Quick. Economical. For kitchen, bedroom, cellar, workshop, auto, camp, boat, garage, store. Get in on ground floor. Send $1.00 today for demonstrator. 100% profits. Money-back guarantee. King Associates, Lynnfield Center, Mass.

FREE Booklet "$5,000—$45,000; Unlimited Vacations." Work home—sparetime. No merchandise, equipment! 100 other home-work businesses! Haylings—PA5, Carlsbad, California.

CHAMOIS. Super quality. Low cost Imports. Sample $1.00. Babrok, PS-3, Hudson Falls, N.Y.

SELL Three retractable pens and pocket protector $1.00. Arcade, Silver Lake, Ind.

BUY Wholesale 450,000 Products, Literature Free. Carter, Box 6011-F, Chicago 80.

SENSATIONAL the easy way to clean, shine autos with $2.00 Dustex. Get one, convince yourself. Write for selling plan. Dustex, 2616 Harrison, Waukegan, Illinois.

SPRAY—Can fire extinguisher. Sell $2.00 you make $1.50. Eleven other profitable pressurized spray can products. Amazing sellers, repeaters. Free literature. Strobel Aerosol Co., 2412-P Market, Louisville, Ky.

FREE book "505 Odd, Successful Businesses." Work home! Expect something Odd! Pacific-38C, Oceanside, Calif.

SELLING Rights invited. New Portable wonder hoist. 1001 uses. Minilift, PS3—Hudson Falls, N.Y.

EXTRA Money. Jewelry—Each piece an original, will not be duplicated. Details free. Faas Laboratory, 13E Dogwood Road, West Orange, N. J.

MAN To earn $150 up per week. Long needed invention. Advertised worldwide. Prospects everywhere full or part time. Exclusive. No investment. Free use of samples. Write Red Comet, Inc., Dept. 386-P, Littleton, Colorado.

INVENTOR—New Product Digest for latest monthly copy send $1.00. Digest B3, Box 2052, Austin, Texas.

FOR Proof of what you can do in specialty manufacturing get our literature. It's free! Miller, Specialty Chemist, Tampa, Florida.

AGENTS—Small Tools—Sell on sight—Good profit. Gam Mfg. Co., Box 1116, Lancaster, Pa.

44 HIGH-GRADE SALESMEN

DO You Have Friends . . . Among Maintenance, Purchasing, Safety Men in Factories, Institutions, Churches, Hospitals, etc. Show them how they can save thousands. Credit for rated accounts. Cash commissions. Accounts protected. Mr. M. A. Dollar, Vice President, Cost Control Chemicals Co., Sanitary And Maintenance Chemists, 45-A Earle St., Newark, N. J.

AD Matches! Sell amazing designs—10, 20, 30, 40, and 240-light book matches. Bigger spot cash commissions; every business a prospect. Low prices for high quality. Repeats. Start without experience; men, women; full, part time. Buy nothing! Sales kit furnished. Match Corp., Dept. PS-64, Chicago 32, Illinois.

$50.00 DAILY Selling gasoline station pennants. Central Flag, Rossmoyne 8, Ohio.

ADVERTISING book matches—Cash in on big demand—sell Union label matches. Cuts for all businesses and political parties—Free powerhouse selling kit—low prices—protection guaranteed on repeat orders—Cash commissions. Superior Match Co., Dept. P-455, 7530 Greenwood, Chicago.

45 EDUCATIONAL & INSTRUCTION

BOOKKEEPERS! Increase your earnings! Operate your own simplified "Dollar-A-Week" Bookkeeping and Tax Service. Full or spare time. Details Free. No obligation. Ellis, Box 203, Cedar Grove, North Carolina.

USED Correspondence Courses and Books sold and rented. Money back guarantee. Catalog free. (Courses Bought.) Lee Mountain, Pisgah, Alabama.

HIGH School—No Classes. Study at home. Spare time. Diploma awarded. Write for Free catalog. HBA-44, Wayne School 2527 N. Sheffield, Chicago 14, Ill.

X-RAY Technicians in great demand. Learn at home. Fascinating work. Good pay. Free catalog. National Institute, Desk 15, 159 East Ontario, Chicago 11.

COMPLETE Your High School at home in spare time with 58-year-old school. Texts furnished. No classes. Diploma. Information booklet free. American School, Dept. X446, Drexel at 58th, Chicago 37, Illinois.

BE a Real Estate Broker. Study at Home. Write for Free book today. GI approved. Weaver School of Real Estate, 2020D Grand, Kansas City, Mo.

AUCTIONEERING! Be an auctioneer. Earn big money. Term soon. Write for catalog. Kansas City Auction School, Suite 312 Shankman Bldg., 3119 Troost, Kansas City, Missouri.

DRAFTSMEN—Urgent demand. Train now. Pay later. Free details. Industrial Training, 1704-B Frederick, Fort Worth 7, Texas.

HIGH School diploma at home. Licensed teachers. Approved materials. Southern States Academy, Box 144 PX, Station E, Atlanta, Georgia.

EARN While You Learn Auto And Diesel Mechanics. Master this top paying trade. Many graduates earn $100 a week and up. Approved for Korean veterans. For free information write Dept. No. 262, Nashville Auto-Diesel College, Nashville 3, Tenn.

PIANO Tuning Pays. Learn this profitable profession at home easily with patented Tonometer and mechanical aids. No knowledge music necessary. Diploma granted. Write for booklet. Niles Bryant School, 3731 Stockton Blvd., Dept. S, Sacramento 20, Calif.

567 HOME-study courses, textbooks. Sensational bargains! Free illustrated catalog. Nelson Company, 210 South Clinton, Dept. 9DV-1, Chicago 6.

ENGINEERING Degrees earned through Extension Division, American College of Engineering, Box 27724 (A), Hollywood 27, Calif.

DOCTOR Psychology degree by correspondence. College Cosmic Science, 7645 North Sheridan, Chicago 26.

EARN College degree, remain employed. Write: Brentwood College, Box 19-721, Los Angeles 15, California.

WANT A Diesel Job? New Opportunities to increase income. Higher Pay, More Money. We can help you Qualify. Tools. Shop method home training. Write today! Diesel Tractor Heavy Equipment Division, Interstate Training Service, Dept. B-2-D, Portland 13, Oregon.

PHYSICAL Therapy and massage. We train you at home. Earn big profits from your own private practice or work with hospitals and doctors. Free catalog. National Institute, Desk 3, 159 East Ontario, Chicago 11.

CAMERA Maintenance—Clearly written, profusely illustrated manual now available. $1.50 postpaid. Mills School of Camera Repair, 1857 N. Western Ave., Hollywood 27, Calif.

STUDY For Doctor's degree of Psychology, Metaphysics and Divinity. Correspondence courses only. College of Divine Metaphysics, Dept. P-S, 2811 North Illinois, Indianapolis 8, Ind.

UNHAPPY? Restless? Dissatisfied? Uncover your hidden abilities, aptitudes, personality with psychological testings. Do tests at home. Receive complete analysis prepared from tests by professional psychologists. Low cost, confidential. Write Psychologic Testing Institute, Dept. 236, 201 N. Wells St., Chicago, Illinois.

GET U.S. gov't job! Men-Women, 18-55. Start high as $80.00 week. Qualify Now! 23,000 jobs open. Experience often unnecessary. Get Free 36-page book showing jobs, salaries, requirements, sample tests. Write: Franklin Institute, Dept. C-22, Rochester, N. Y.

WELDING training pays at Hobart Welding School. Box P-451, Troy, Ohio. VA Contract. Best equipment. Catalog Free.

MEDICAL Laboratory Technicians in great demand. We train you in your own home. Catalogue free. Imperial Technical Institute, Box 973-B, Austin, Texas.

HOME Study course, drugless therapy. Free literature. Inst. of Drugless Therapy, Tama, Iowa.

GROW Mushrooms. Cellar, shed and outdoors. Spare, full time, year round. We pay $3.50 lb. We paid Babbitt $4,165.00 in few weeks. Free Book. Washington Mushroom Ind., Dept. 180, 2954 Admiral Way, Seattle, Washington.

BE Rich! Be extravagant! Have what you want: To get married? A car? A home? Control your finances instead of their controlling you. David Cassils, 350A West 71st Street, NYC 23.

BECOME a Doctor of Psychology or Metaphysics. Learn secret of contentment, happiness. Win degree of PsD. or MsD. Solve mental worries. Free book. College of Universal Truth, 5038-K Broadway, Chicago.

CLERGYMEN'S—Laymen's courses. Free bulletin! Midwestern Bible School, 517 Merchants Bank Building, Indianapolis.

FREE Voice Book! Shows you how you can train for strong, confident voice. Sound masculine! (State Age.) Prefect Voice Institute, 210 South Clinton, Studio 2DV-1, Chicago 6.

DOUBLE Your pay with a College Equivalency Degree. Wonderful opportunities. No tedious courses. Bulletin 10c. Cramwell Institute, Adams 7, Mass.

TRANSFORM yourself via subconscious dynamics. Free Amazing Brochure. Box 847 (A-4), Ocean Park, Calif.

HELP Yourself! Solve personal problems by Self-Mastery. Free information. The Leavitt Science, Clinton 4, Illinois.

IQ Test Determines Your Aptitude. How Smart are You? Your Wife? Two Dollars Each Test. Includes Grading. Missouri Testlab, Box 3762, St. Louis 22, Mo.

LEARN mathematics at home. Individualized instruction. The New Correspondence School, Box 27, St. Johns Station, Brooklyn 13, New York.

HOW To Get What You Want. Practical Course of instruction $1.00 prepaid, guaranteed. Science Syndicate, Box 2803-B, Tucson, Arizona.

SUPER Memory overnight! Revolutionary method! Bijou, Box 1727-VW, Hollywood 28, California.

BE Somebody! Get somewhere! Request free positive thought motivation plan. Easy, quick results. Write: Applied Christian Psychology, Inc., Box 1924-B, Louisville 1, Kentucky.

BIBLE Correspondence courses. College degrees. Aurs, 156 West 73rd Street, New York City.

OCCUPATIONAL Guidance, aptitude testing. Confidential. Richard, 182-25 Wexford, Jamaica 32, New York.

MEDICAL Laboratory technique. Learn at home. Catalog free. Century College, Desk 3, 9 East Ohio, Chicago 11.

LEARN Penmanship. Thorough courses. Free details. No obligation. Handwriting book 25c. Ornamental alphabets 10c. Tevis, Chillicothe, Mo.

BECOME An expert Real Estate Broker or Salesman. Make money anywhere. Complete home study course. Free information. Kansas City Realty School, Suite 312, 3119 Troost, Kansas City, Missouri.

BIG Earnings in drafting. Complete course $19.00. Roth Tech., 277 Park, Youngstown 4, Ohio.

46 CONTESTS

PRIZE Contests provide Fabulous and Confidential Home Income Opportunity! Here's How and Where to Win Your Share! Send stamp! National Contest Bulletin, Box 2685-PS, Miami 16, Florida.

47 DETECTIVES

DETECTIVE Training. Phillips Secret Service System, 1917-C North Kenneth, Chicago 39 Ill.

DETECTIVES—Work home—Travel. Experience unnecessary. Detective Particulars free. Write Wagoner, P-125 West 86th, New York 24.

48 LANGUAGE OUTFITS

IT'S Fun learning a language by Linguaphone World's Standard Conversational Method. At home, easily, quickly master French, Spanish, German, Russian, Japanese, Modern Greek—32 languages available. Save time, work, money. Send for Free book. Linguaphone Institute, 54-045 Radio City, New York 20.

50 BUSINESS SERVICE, INFORMATION, NAME LISTS

FREE—6,000 Mail Order firms buying new products. Guaranteed accurate. Lowest fee for addressing. Write: Gaylords, Dept. 41, North Adams, Mass.

MAILING Lists, most any classification. 1000 names $5.00. 1000 your circulars mailed with ours $4.00. 5000 your circulars printed and mailed $12.95. Write Dixie Mailers, King, North Carolina.

6,000 AGENTS, Homeworkers, buyers, 80c—100. $7.00—1,000. College students, 1,789 names, 1c each. Mailing, 2 Madison, Greencastle, Indiana.

51 SPECIAL SERVICES

OBTAIN information you desire from Los Angeles. Mail $1.00 with request. Andrews, 17311 Victory Blvd., Van Nuys, California.

LET Us do your drafting. All phases of drafting: mechanical, Architectural, structural, patent, detail and working drawings! Write estimate. "Personalized Drafting Service," 22 Zabriskie Street, Jersey City 7, New Jersey.

OMAHA 2, Nebraska, remails 25c. Sunday classifieds airmailed $1.00. Box 560.

52 AUTHORS SERVICE

NO luck finding a book publisher? Write for Free Booklet PS. Vantage Press, 120 West 31st, New York.

WANTED: Book manuscripts—all subjects considered. Greenwich Book Pub. (Atten. Mr. Ibsen), 489 Fifth Ave., N.Y.C.

53 ADVERTISING, AGENCIES, ETC., FOR ADVERTISERS

BEFORE Advertising—get instructive Ad-Guide and Ratebook, 10c. Ideas developed. Advertisements prepared free. Chicago Advertising Agency (Established 1900), Chicago 4.

MAKE extra money. Address, mail postcards. Spare time every week. Write Box 14, Belmont, Mass.

ADVERTISE; 24 words, 100 Canadian Newspapers $5.50. Lists Free. Advertising Bureau, 10511-P Springfield, Chicago 43.

500 RADIO Stations which accept advertising on commission and 200 Magazines which give Free publicity. Including instructions "How"—$3.00. Satisfaction guaranteed. Brass, Box 1664-PS5, Chicago 90.

54 CARTOONING, SIGN PAINTING, CHALK TALKS

CARTOON Your way to success! Internationally known instructor, Raye Burns, will personally teach you to create original, salable cartoons at home. Course of 26 lessons only $2.85. Write for Free Details. Raye Burns School, Box 3583-S, Cleveland 18, Ohio.

"HOW To Make Money With Simple Cartoons"—A book everyone who likes to draw should have. It is free; no obligation. Simply address Cartoonists' Exchange, Dept. 194C, Pleasant Hill, Ohio.

CARTOONISTS: Amateur, Professional. Prepare for animation with Max Fleischer's plan. Write Vera Coleman, 60 East 42nd Street, New York, N. Y.

CHALK Talks. Laugh producing program $1.00. Illustrated Catalog 10c. Cartoonist Balda, Oshkosh, Wisconsin.

PAINT Signs With Master Patterns. Set 1¼" to 12" prepaid $1.00. Sample 3c. Eyerly, PS-583, Newton, Iowa.

55 TYPEWRITERS & OFFICE MACHINES

TYPEWRITERS, Printing Devices, Office Machines, supplies, appliances. Dixie Graph, King, North Carolina.

BUY Surplus office machines, equipment, typewriters, etc. from government. List $1.00. Box 169ACG, East Hartford 8, Conn.

TYPEWRITER Ribbons, 65c, 2 $1.00. Black, red-black. Full-length. 100% satisfaction. Franklin Specialties, 613 18th Street, Altoona, Pa.

56 RUBBER STAMPS & OFFICE SUPPLIES

3 LINE Rubber stamp. Self inking pad plastic case $1.00. Extra line 35c. William Anderson, Box 855P, Mountain Home, Tennessee.

CUSTOM Made—Deep letters lasting years, strictly finished product. 3 lines $1.00. Extras $.25 Each. Cash. Stamp-It, Box 9012, Chattanooga, Tennessee.

3 LINES, $1.00. Fast service! Also, fine printing, samples, catalogue. Johnson Press, 443 McDonough, Brooklyn 33, N. Y.

57 PRINTING, MULTIGRAPHING, ETC.

QUALITY printing. Booklets, publications, catalogs, stationery. Free catalog. Adams Printers, 30 West Washington, Chicago 2, Illinois.

BUSINESS Letterheads, Illustrated Catalog; Design Book 10c. Howprint, 723-W Eunice, Webster Groves 19, Missouri.

1000 #10 ENVELOPES $6.50. #6¾ $4.50. Fender Press—M, Carson, Iowa.

OFFSET printing. $6.50-1000. 8½x11, 16 lb. National Letters, 1457 Broadway, New York 36.

500 5½x8½" NOTEHEADS $2.50 Postpaid. Foty, 16721 Prospect, Wayzata, Minn.

FINE Printing by craftsmen. Reasonably priced. News Printers, Comfort, Texas.

GUMMED Labels, Stationery. Free list. Reed, Box PS-135, Spiro, Okla.

PRINTING by Ace—Samples, Catalog Free. P.O. Box 262, Lyndhurst, New Jersey.

1000 EMBOSSED Cards, $2.95 Postpaid. Complete Business Printing. Samples. Jaynar, Box 723A, Oak Lawn, Ill.

QUALITY Mimeographing, printing. Free samples and prices. Currier, New Lebanon Center, N. Y.

JOB Printing—Letterheads—Envelopes—Circulars. Printing, 21-S Barclay, Portsmouth, Virginia.

PRINTING — Labels — salesbooks — register forms. Lowest prices. Nathan Printing Service, 5201 N. 8th Street, Phila. 20, Penna.

1,000 BUSINESS Cards $2.95 to $6.25. Job Printing Catalog. Scull's, Dept. B, 121 West 25th Avenue, Wildwood, N. J.

58 PRINTING OUTFITS, SUPPLIES

DO your own printing. Save money. Simple rules. We supply everything. Print for others; good profit. Raised printing like engraving, too. Have home shop. Details free. Kelsey Presses, V-8, Meriden, Conn.

BARGAINS: Used printing, office equipment. Free lists. Sperry's, Williamsport 24, Pennsylvania.

SAVE Money. Print your own; shipping labels and instructions; postcards; advertisements on shipping and wrapping material, etc. . . . Small, handy, economical ad & label printer. Free information. Earl Brown, Box 1022, San Francisco, Calif.

PRINTING Presses, Type Supplies. Lists 3c. Turnbaugh Service, Loysville, Penna.

MAKE your own self-molding rubber stamps and printing cuts. Plexirubber, Argyle 2, Wisconsin.

59 PATENT ATTORNEYS

INVENTORS: Learn how to protect your invention. Unless the inventor is familiar with patent matters, he should engage a competent registered patent attorney or agent to represent him. We are registered to practice before the U.S. Patent Office and prepared to serve you in handling your patent matters. "Patent Guide for the Inventor" containing detailed information concerning patent protection and procedure with "Record of Invention" form will be forwarded to you upon request—without obligation. Clarence A. O'Brien & Harvey Jacobson, Registered Patent Attorneys, 52B-D District National Building, Washington, D. C.

C. A. Snow & Co.—S-427, Snow Building, Washington 1, D. C. Registered Patent Attorneys. Write for information.

REGISTERED Patent Attorney offers services. Sanders, 6430 Evans, Chicago 37, Illinois.

INVENTORS: Without obligation, write for information explaining the steps you should take to secure a Patent. John Randolph, Registered Patent Attorney, 207 Columbian Bldg., Washington 1, D. C.

INVENTION Record form free and "Patent Information Every Inventor Should Have". Carl Miller, Registered Patent Attorney, Woolworth Building, New York.

INVENTORS—Send today for instructive booklet "Patent Protection for Inventors" giving detailed patent information and outlining preliminary steps to take toward patent protection,—also "Evidence of Invention" form. Victor J. Evans & Co., 141-D Merlin Building, Washington 6, D.C.

INVENTORS—If you believe you have an invention, you should find out how to protect it. The firm of McMorrow, Berman & Davidson with offices in Washington, D. C., is qualified to take the necessary steps for you. Send for copy of our Patent Booklet "How to Protect Your Invention." We will also send you an "Invention Record" form. No obligation. They are yours for the asking. McMorrow, Berman & Davidson, Registered Patent Attorneys, 143-Z, Victor Building, Washington 1, D. C.

"INVENTOR'S Guide" and "Record of Invention" free on request. Frank B. Ledermann, 154 Nassau Street, New York City.

PATENTS—Irving L. McCathran, 316 McLachlen Bldg., Washington 1, D. C. Registered Patent Attorney.

INVENTORS: When you are satisfied that you have invented something of value write me, without obligation, for information as to what steps you should take to secure a Patent. Write Patrick D. Beavers, Registered Patent Atty., 938 Columbian Bldg., Washington 1, D. C.

60 FOR INVENTORS

INVENTORS: Learn how to protect your invention. Unless the inventor is familiar with patent matters, he should engage a competent registered patent attorney or agent to represent him. We are registered to practice before the U. S. Patent Office and prepared to serve you in handling your patent matters. "Patent Guide for the Inventor" containing detailed information concerning patent protection and procedure with "Record of Invention" form will be forwarded to you upon request—without obligation. Clarence A. O'Brien & Harvey Jacobson, Registered Patent Attorneys, 52A-D District National Building, Washington, D. C.

INVENTORS, if you have an invention for sale, patented or unpatented, write Institute of American Inventors, Dept. 30A, 631-E St., N.W., Washington 4, D. C.

INVENTORS—This firm is registered to practice before the United States Patent Office and available to assist you in the preparation and prosecution of your patent application. "Patent Protection for Inventors" booklet containing detailed information and steps to take toward patent protection sent promptly upon request. No obligation. Victor J. Evans & Co., 142-D Merlin Building, Washington 6, D.C.

INVENTORS—Send for free patent information book and inventor's record. Registered Patent Attorney. Associate Examiner, Patent Office 1922-1929; Patent Attorney & Advisor, Navy Department 1930-1947. Gustave Miller, 45PSI Warner Building, Washington 4, D. C.

INVENTORS: Without obligation, write for information explaining the steps you should take to secure a Patent on your invention. John Randolph, Registered Patent Attorney, 206 Columbian Bldg., Washington 1, D. C.

INVENTION Record form free and "Patent Information Every Inventor Should Have". Carl Miller, Registered Patent Attorney, Woolworth Building, New York.

INVENTIONS Promoted. Patented or unpatented. A-1 service for inventors since 1911. Write Adam Fisher Co., 5418 Idaho, St. Louis, Mo.

PATENT Searches, $5.00, including patent copies. We report directly from Patent Office records. Free protection forms, 48 hour Airmail Service. Patent Service Institute, 945-B Pennsylvania Avenue, Washington 4, D.C.

INVENTORS—If you believe you have an invention, you should find out how to protect it. The firm of McMorrow, Berman & Davidson with offices in Washington, D. C., is qualified to take the necessary steps for you. Send for copy of our Patent Booklet "How to Protect Your Invention." We will also send you an "Invention Record" form. No obligation. They are yours for the asking. McMorrow, Berman & Davidson, Registered Patent Attorneys, 143-Y Victor Building, Washington 1, D. C.

NEW Information! How to Study Patents to Make Your Own New Products to Sell. Rush name on postcard. Houston Maupin, Tipp City 64, Ohio.

"INVENTOR'S Guide" and "Record of Invention" free on request. Frank B. Ledermann, 154 Nassau Street, New York 38, New York.

PATENT Searches, including copies of nearest patents, $5.00. Reports airmailed within 48 hours. More than 100 registered patent attorneys use my service. For Free invention protection forms, write Miss Ann Hastings, P.O. Box 176, Washington 4, D. C.

SEARCHES—Put your patent searches in the hands of a Registered Patent Attorney or Agent as he qualifies to give a worthwhile patentability report. Record of invention form upon request and information on patent protection. Patrick D. Beavers, Registered Patent Attorney, 939 Columbian Bldg., Washington 1, D. C.

PATENT Searches $5.00, 48-hour service. Free Invention Protection forms. Write Raymond L. Smith, Patent Searcher, 622 Sheraton Building, Washington 5, D. C.

PATENT Searches $5.00, 48-hour airmail service. Invention Protection forms free. Write Patent Engineering Service, 711 14th Street, N.W., Washington 5, D. C.

SELF-Sell your Inventions, Ideas. V. Young, Box 332, Wadsworth, Ohio.

INVENTOR—New Product Digest for latest monthly copy send $1.00. Digest B3, Box 2052, Austin, Texas.

PATENT, Design, Trade-Mark drawings. International Patent Drafting Service, P.O. Box 134, Dayton 1, Ohio.

FREE List of inventions manufacturers have requested. Tell us whether yours is patented, unpatented. Invention Bureau, 208-S Clinton, Oak Park, Illinois.

61 INVENTIONS WANTED

INVENTIONS wanted. Patented; unpatented. Tremendous Manufacturers lists. Global Marketing Service, 1404 Mitchell, Oakland 1, Calif.

INVENTORS: Hundreds of manufacturers have requested our assistance in locating marketable new products. Complete information free. Institute of American Inventors, Dept. 30C, 631—E Street, N.W., Washington 4, D. C.

FROM center American industry, National Research & Development Corporation seeks patented or unpatented inventions for development or sale. Write for booklet C. Room 324, 11 West 42 Street, New York 36, N. Y.

INVENTIONS Sold—Commission basis. National Patent Sales, 1312 East 44th, Richmond 24, Virginia.

INVENTIONS And new products wanted for development and sales. Product Development Company, 82-A Boston Avenue, Massarequa, N. Y.

INVENTORS. We sell, promote, market inventions. Write immediately if you have marketable invention. Complete details free. Kessler Corporation, 74X, Fremont, Ohio.

WILL Develop, manufacture, & market your patentable hardware or household tool equipment or gadget on royalty basis. Murphy Machine Products, 14320 E. Jefferson Ave., Detroit 15, Mich.

PATENTED; Unpatented. Write for our inventions wanted list and particulars of foremost promotion service. Superior Inventions Agency, 338-342 North Rodeo, Beverly Hills, Calif.

INVENTIONS—New ideas, wanted by manufacturers. Otto Grube, Egg Harbor, New Jersey.

INVENTORS Don't sell your invention Patented or Unpatented until you receive our offer, write Cowgill, Box 298, Marion, O.

INVENTIONS Wanted. Patented or Patent Pending. 24 years experience Promoting Inventions. National Service Bureau, 3122 Meramec, St. Louis 18, Mo.

CASH Buyers for ideas and inventions. Write National Inventors Institute, 457 Munsey Building, Washington 4, D.C., or 4097 East 131st St., Cleveland 5, Ohio.

INVENTORS! If your invention is available for negotiation, write: Willard Industries, Box 2106, San Francisco 26, Calif.

CANADIAN Patent Enterprises. Active Canadian, U.S. sales. 31 Leighland East, Burlington, Ontario, Canada.

NEW Inventor's Handbook contains valuable information never before published on When, Where and How to Sell an Invention. Tells steps that lead to Inventive Success. Send $1.00 for your copy today. Patent Research Bureau, 308-A Coachman Building, Clearwater, Fla.

INVENTIONS Wanted. Patented, unpatented. Send for free form "R", literature. Gilbert Adamec, Patent Broker, 3 Park Row, New York City.

63 MANUFACTURING

ENGINEER your product for greater profit. Product design, development service for small manufacturers, Inventors. Graduate Electrical, mechanical engineers. 20 Years experience. Marbill Products, Ellicott City, Maryland.

64 MODELS, MODEL SUPPLIES

SHIP and yacht model fittings; blueprints. Send 35c for illustrated catalog #29 listing hundreds of items. A. J. Fisher, 1002-2 Etowah Ave., Royal Oak, Michigan.

SHIP and other scale models. Most complete line in New England. Kits, fittings, plans, books, tools, engines, motors. Illustrated catalog 25c. James Bliss & Co. Inc., Dept. PS, 342 Atlantic Ave., Boston 10, Mass.

SHIP Models and yacht supplies. Complete. Large 68 page catalogue 50c. William Wild, 316 East 11 St., New York City 9.

"ST" Steam engine castings, fittings, boat plans catalog 15c. Ship Models Ltd., 186 Summer, Andover, Mass.

POWER Models. Unusual steam, gasoline and traction engines, fittings, metals. Anniversary catalog 50c. Charles Cole, Ventura, California.

STEAM engines, boilers, castings. Catalog 25c. Anton Bohaboy, 2297 Price, Rahway, N. J.

65 HOME CRAFTSMAN

LEATHER, tools, lacing, supplies. Free Catalog. National Handicraft, 199 William St., New York 38.

"PRACTICAL Painting, Wood Finishing" shows how to get professional results. Furniture finishing, workshop projects, home decorating. Complete Modern brush and spray methods. Tricks you've never seen. Write Home Craftsman, 115-F Worth St., N. Y. 13.

PLASTICS home-craft course for Men and Women. Tells and shows how to make hundreds of fast selling plastics products. All plastics and materials for 23 projects included in course. No special tools needed. Course pays for itself. Write for Free booklet. Interstate Training Service, Dept. D-2-D, Portland 13, Oregon.

LEATHERCRAFT, Metal Tooling, Textile Painting, Beadcraft, Shellcraft, many other crafts. Fun, easy, profitable! Free big illustrated catalog. Write today. Kit Kraft, Dept. 324, Box 1086, Studio City 1, Calif.

WOODWORKING course for home craftsmen. Twenty-two manuals. Over 1,000 pages. 75 training projects. Only complete home training program available today. Carefully written, profusely illustrated. Covers everything from wood selection to final finishing. Complete instruction on care and use of all hand and power tools. Prepared by expert manual training instructors. Write for free booklet. Interstate Training Service, Dept. G-2-D, Portland 13, Oregon.

BUY wholesale nationally advertised power hand tools, thousands other products at big discounts. Free "Wholesale Plan." American Buyers', 630-SS Linden, Buffalo 16, New York.

LEATHERCRAFT supplies at lowest prices. "Craftool" Stamps. Catalog 10c. Crown Leather, 24 Spruce Street, New York 38.

NEW! Largest Leather and Craft Catalog! 1000's of items. Send 25c (refunded with first order). Russo Handicraft Supplies, Dept. P6 245 S. Spring, Los Angeles 12, California.

LEATHERCRAFT for Pleasure and Profit. Big new illustrated catalog of leathers, easy-to-make projects, tools, accessories, supplies. Send 10c today. Tanart Leathercraft Co., Dept. PS, 140 N. 3rd Street, Philadelphia 6, Pa.

LEATHERCRAFT. Tremendous stock of leather, tools, supplies and kits. In leather business over forty years. Send 10c for big catalog. Sax Bros., 1111 No. 3rd, Dept. PS4, Milwaukee 3, Wisconsin.

15 NEW Patterns animated weathervanes; bull chasing farmer, bucking broncho, drummer, locomotive with moving piston, etc. $1. Craftplans, 1321-BB South Michigan, Chicago 5.

90 ALL New, full size lawn ornament and novelty patterns, up to 20" high. Only $1.00. Mastercraft 428, 7041 Olcott, Chicago 31, Illinois.

LEATHERCRAFT. Everything needed by beginners, advanced hobbyists and professional leatherworkers. Largest stock of supplies in U.S. Moderate-priced tooling leathers, top quality calfskins, tools, supplies, kits. Send 10c for Big Catalog. J.C. Larson Co., 820 S. Tripp, Dept. 4954B, Chicago 24.

ART Metal Tooling. Enjoyable, profitable hobby. Big illustrated catalog 10c. Groundmaster, Boulder 8, Colorado.

SURE Your modern design is good? Send sketch and $1.00 for critical analysis. Professional modern designer. Chez, 626 El Dorado, Oakland, Calif.

STYLECRAFT sure fire hits. "Pretraced" leather kits. Handbags, Billfolds, Filigree Belts, over fifty other projects. Patterns on leather. Why trace? Just carve, assemble and lace. Large assortment "Precarved" kits also available. Send 25c for catalog, free folder. Refunded first order. Apache Leather Company, 2804 E. Washington St., Phoenix, Arizona.

MEXICAN Leathercraft at the lowest price in the world. Write for information to: Productos Santuario Hermanos, Berlioz #193, Mexico 2, D. F.

129 NEW full-size jigsaw patterns. Artist-drawn. $1. Craftplans, 1321-B South Michigan, Chicago 5.

PATTERN-Of-the-Month plan for youths 6-12. Simple handicraft projects. $2.00 per year. Boys Craft Club, Box 293A, Mishawaka, Indiana.

BRASS, Copper—Rods, bars, wire, etc. Catalog free. Groundmaster, Boulder 8, Colorado.

DO It yourself plans, helpful hints, trade secrets for the shop and home. Send $1.00 for complete list. Aviron Enterprises, P.O.B. #71 Bay Station, Brooklyn 35, N.Y.

KNOCKDOWN cedar chest and lumber free price list. Bedford Lumber Company, Shelbyville, Tennessee.

SQUAREKNOTTERS: Make belts, handbags, lanyards, dog leashes, etc. Special offer! Beginner's book, catalog and quality cord samples 15c. P. C. Herwig Co., Dept. P41, 39 Henry St., Brooklyn 1, New York.

LAMP Size desert driftwood. Sand blasted. $4.50 pod. Satisfaction guaranteed. Darling Ribbonwood Lamps, 6739 34th St., Riverside, Calif.

MAKE Children's furniture, 10 patterns with instructions; $1.00. Bell Plans, Rd # 16, 362 East 59th St., Brooklyn 3, N.Y.

LIKE To make useful things for the home? 200 choice illustrated projects with instructions. $1.25. George Hitz, 410 West Ashley, Jefferson City, Missouri.

RAFTER-Rite lays out complete rafters. No figuring, scales or tables required. Illustrated booklet $1.00. Box 291, Worcester 1, Mass.

LEATHERCRAFT Tools, Leather Embossing Plates, Craft Accessories, Dies. Catalogue 10c. Louis Jones Engineering Company, 1613 Main, Fort Worth, Texas.

COMPLETE Illustrated leathercraft catalogue twenty-five cents. Jonas Handicraft, 10 Frankfort Street, New York 38, New York.

FREE! Leathercraft catalog. Do It Yourself! Tandy Leather, Box 297BC, Tulsa, Okla.

HOME Power tool woodworkers. Each state. Earn extra money making parts for toy manufacturer. Highway Toys, Box 432, Wilmington, Mass.

MAKE Lamps, large cypress knees $1.00. John Rawls, Winter Haven, Fla.

66 BUILD IT YOURSELF

UPHOLSTERER'S Webbing, top grade 9c yard. Maykraft Wholesalers, 727 Bullock, Yeadon, Pa.

RADIO Control garage door from your car. Very complete drawings, instructions $3.00. Box 351, 5880 Hollywood Blvd., Hollywood 28, Calif. Act Now.

MAKE Alarm clocks operate electrical appliances, simplified instructions, 25c. Clayton, R-5, Cumberland, Maryland.

GRANDFATHER Clock plans dollar. Movements from forty three dollars. See March ad. Kuempel Clox, Minneapolis 16, Minn.

BUILD Your Own Room Air Conditioner. See our ad Page 60. Kool-Kit, Box 4955, Alexandria, Va.

GEIGER Counter and Metal Detector Kits. Inexpensive Educational. Free Literature. Electronic Applications, 5024 Lee Hwy., Arlington 7, Va.

BUILD an add-on House. Drawings and information $1.00. Box 572, Yakima, Wash.

OUTDOOR fireplace barbecue type. Large blueprint complete details. One Dollar. P. R. Johnson, Box 64, Boston 1, Mass.

STREAMLINED Home construction estimating $1.00. Saves hours. Box 149, Milford, Penna.

BUILD Streamlined plywood kitchen cabinets. Plans, photos, instructions, $1.00. Playnecabinets, 4617 Johnson, Western Springs, Illinois.

BUILD It yourself and save 75 dollars. Write Bill Cotter, Washington 18, D.C.

POWER Lawn mowers, parts, price list. Free literature. Klingsicks, Kingfisher, Okla.

FURNITURE . . Wrought iron legs and frames! You assemble . . Free catalogue. Phillips Furniture, East Peoria 6, Illinois.

BUILD Inexpensive concrete blockmaker, mixer, brick molds. Write, Clyde Lee, Mountain View 1, Oklahoma.

AIR condition your home for $150 or less. Box 7111, Tulsa 5, Okla.

BAROMETER Movements. Make own case. Free information. Abtek, 1075 Third Avenue, New York 21.

OUTSTANDING Machinist tools! You Build them! Dandy government jigs. Book of drawings and shop hints only $2.00! Money back guarantee. Progressive Tool Designers, 2161F So. 76th St., Milwaukee 14, Wisconsin.

BUILDING A house? Save over ½. Plans, scale drawings, instructions. $1.00 Lad, Ravencliff, W. Va.

BUILD Beautiful goldfish and lily pool. No expensive forms. Simple illustrated directions, pictures, material list. Send $1.00. D. M. & W. Company, East Troy, Wisconsin.

CORNER cupboard, early American, six feet high. Attractive. Easy to make. Complete plans showing simple construction. $1.00. Chucklynn, 125 East Main, Waterloo, New York.

67 OLD GOLD, JEWELRY, WATCHES, ETC.

COSTUME Jewelry supplies. Catalog and Samples. 35c. Largest line in America. Milady-Fair Co., G.P.O. Box 1328, New York City 1.

HIGHEST Cash For Old Gold, Broken Jewelry, Gold Teeth, Watches, Diamonds, Silverware, Spectacles, Platinum. Free information. Satisfaction Guaranteed. Rose Refiners, Heyworth Bldg., Chicago 2.

FREE Sample pair of Earrings shows you how easy it is to make beautiful costume jewelry. Over 5000 styles listed in New Catalog—25c. Barry's, 179 Ardsley Court, Newark, New Jersey.

RHINESTONES, Jewelry settings, copper enameling. Sample Earring Kit and Catalog 25c. Catalog only, 10c. J & M Novelties, Dept. CD-4, Griffith, Indiana.

10 SWISS watches $18.00, catalog 10c. Berkowitz, 1150 Castlehill, New York 62.

USED And new watches, $2 up. Free list. Southern Watches, Gray, Georgia.

68 TOBACCO & PIPES

PIPE Smokers! Cigar Smokers! Free illustrated catalog offers fabulous savings on choice imported and domestic pipes, cigars, tobaccos, supplies. Write Wally Frank, Dept. 26, 150 Nassau Street, New York 38, N. Y.

CLEAR Havana cigars below wholesale. Write Erickson's Cigar Co., Bayshore, New York.

NEW Briar pipe cleaned as you smoke for absolutely free draw. No gurgling. No loss of tobacco. Upper bowl separates quickly from pipe. Circular. Split Bowl Pipe Co., Box 431, Sayville, N. Y.

69 FOR THE HOME

OLD Wall telephones. Nice oak cabinet. Good working order. $15.00, two $28.00. Six $60.00. Shipped from Calif. or Wisconsin collect. Tontz's, Elsinore, Calif.

HOLLAND Wooden shoes, large sizes $1.75 each. $3.00 pair. Klaas Koster, P.O. Box 414, Jamaica, New York.

FOAM rubber furniture cushions—Factory seconds 50% discount. Free catalog. Perma-Foam, 140-A Main Street, East Orange, New Jersey.

BURGLAR Alarms for Homes, Offices—$10.95. Vehicles, $24.95. Check, money order, postpaid. U-Makit Industries, 939 E. 174th St., Bronx 60, N. Y.

CESSPOOL, Septic-tank cleaner Formula; dollar bill. Stenseth, Box 231—Regina, Canada.

THE Modern Mousetrap Lucha Mouse Teaser Automatically Re-Setting Catches the whole Family. $2.00 Postpaid. Powers Hardware, McGregor, Michigan.

HOME Fire Alarm System $12.95, Guaranteed. Free Literature. Alarms, 1430 Douglas, Racine, Wisc.

BEAUTIFUL Carving Set 9 pieces, including 6 Steak Knives, finest Sheffield Steel with exceptional handles, including embossed case, regular $46.75 value for $12.50 postage paid. Order this set now, examine it and if you feel you could sell others, write for quantity price. A guaranteed product which would make a prized Wedding or Christmas present. Imperial Sales Company, 201 Northwestern Building, Minneapolis 1, Minnesota.

70 OF INTEREST TO WOMEN

MAKE money addressing envelopes sparetime. Glenway, 5713 Euclid, Cleveland 3, Ohio.

MAKE extra money. Address, mail postcards. Spare time every week. Write Box 14, Belmont, Mass.

MAKE Big Money At Home! Invisible Reweaving pays up to $10.00 profit in an hour. Make tears, holes disappear from fabrics. Constant demand from laundries, cleaners, homes brings steady earnings. Details Free. Fabricon, Dept. D, 8342 S. Prairie, Chicago 19, Illinois.

TRICKS With textile paints book $1. LaVee PSM, 22 East 29, New York City 16.

GROW Mushrooms. Cellar, shed, and outdoors. Spare, full time, year round. We pay $3.50 lb. We paid Babbitt $4,165.00 in few weeks. Free Book. Washington Mushroom Ind., Dept. 181, 2954 Admiral Way, Seattle, Washington.

BARGAIN Perfume catalogue $1.00 refunded with first order. Box 3053, St. Louis 5, Mo.

NEED Extra cash? Get it selling Blair's unusual line of household and food products. Every housewife a prospect. Products sent on Free trial. Write Blair, Dept. 55ND-1, Lynchburg, Va.

HOW To Grow and Bloom House Plants Successfully $1. Josephs, Box 352, North Chicago, Illinois.

YOUR Baby's shoes in bronze make a lifetime keepsake. Write Deagle, 238 Jackson, Twin Falls, Idaho.

WRITE Your own will. Complete instructions, forms. $1.00. L. C. Hannon, P.O. Box 4891, Kansas City, Mo.

A Dress shop in your home. No investment. Liberal sales commissions. Write Bellecraft Fashions, 111 YT Eighth Ave., New York.

71 FOR SALE MISCELLANEOUS

DRESSES 24c; shoes 39c; men's suits $4.95; trousers $1.20. Better used clothing. Free Cat. Transaworld, 164-AK Christopher, Brooklyn 12, N. Y.

POCKET Adding machine from Germany. Adds, subtracts to 999,999,999. Handy for shopping, homework, farmers, businessmen. $3 from Somerset Overland Co., James Street, RD6, Somerset, Pa.

THROW Rugs. Wool. Bound. 20"x36" $2.15, 18"x27" $1.15. Postage paid. Griffe Enterprises, Box 91, Station D, Toledo, Ohio.

BUY Direct from government. Surplus trucks, jeeps, tools, machinery, radio, electrical, plumbing, binoculars, microscopes, construction equipment. Hundreds other items. List $1.00. Box 169ACL, East Hartford 8, Conn.

PHONOGRAPH Records! Out-of-print and current. All types. Katherine Smith, 3110 W. 5th, Ft. Worth, Texas.

LAMINATING Kit $1.00. Preserves Snapshots, Licenses, Passes Etc. Andy Barlow, 305 West 6th Ave., Huntington, West Virginia.

72 WANTED TO BUY & SWAP

SCRAP Mercury (Quicksilver) containers supplied. Tantalum—Bismuth—Tungsten. Metallurgical Products Co.—Established 1909, 35th & Moore Streets, Philadelphia 45, Pa.

QUICKSILVER, Sterling, Silver Solders, precious metals. Mercury Terminal, Norwood, Massachusetts.

73 WEARING APPAREL

45c JERSEY Gloves $3.60 dozen. John Alger, 5102 North 50th, Omaha 11, Nebr.

73A TALL MEN'S SECTION

TALL Men, 6' to 6'11". Free Clothing Catalog. Write Ted Thompson, Dept. 205, 6 Green Street, Boston, Mass.

74 RAZOR BLADES, SHAVERS

DOUBLE Edge blades 100 for $1.00. Box 146D, Dayton 1, Ohio.

100 DOUBLE Edge Razor Blades $1.00. Guar. .ed. Dave Pittel, 4640 Jackson, Chicago 44, Illinois.

76 DRAWING, SUPPLIES & EQUIPMENT

GIANT Graph paper 36" x 36", 1" squares, ¼" quad-rules; 2-sides. Craftsmen, designers. 3-$1; 8-$2. Hudson Industries, Box 104-S, Washington Bridge Station, N. Y. 33, N. Y.

77 GEIGER COUNTERS & TREASURE FINDERS

TREASURE Hunters! New 11-pound featherweight Model 101 locator for gold, silver and minerals. Money-back guarantee best available. Also Geiger Counters for uranium prospectors. Complete information free. The Goldak Company, 1540 W. Glenoaks Blvd., Glendale 1, Calif.

GOLD, Silver, Metal Detectors, Geiger Counters for Uranium, Mineralights. Sensational new fully guaranteed models. None Finer. Information Free. Detectron Corp., 5528 Vineland Ave., North Hollywood, California.

"SNOOPER" Geiger counter. Only $29.95 complete. Super-sensitive. Pocket size. Find a fortune in uranium. Order now. Send $5.00, balance c.o.d. Money back guarantee. Free catalog-Scintillator and larger uranium and metal detectors. Precision Radiation Instruments, 2235CPS So. LaBrea, Los Angeles 16, California.

SELECTIVE metal and mineral detector. Revolutionary design. Distinguishes metals from black magnetic sands. Readily detects metals under salt water. Also Geiger Counters. Free literature. Gardiner Electronics Company, 2543 E. Indian School Rd., Phoenix, Arizona.

LOCATE Uranium. New Geigerscopes. $3. each. Postpaid. Leeway, Mountain View—D1, Oklahoma.

GOLD And Silver indicators, price $30. Box 51, Plant City, Fla.

URANIUM, Gold, silver treasure. New, power-packed, highly sensitive Metal Detectors, Geiger Counters and Mineralights. Kit and Assembled Models from $12.50. Lightest weight, guaranteed, free literature. Electronic Applications, 5024 Lee Highway, Arlington 7, Va.

"HOW To Make Money Prospecting for Uranium." Free booklet. Send 20c for handling, postage. Geiger Co., 195-S4 Sackett Street, Brooklyn 31, N.Y.

25 x 36 URANIUM Areas map. 9 Southwest states. $3.00 postpaid. Prospector, Box 1342, San Francisco 1, Calif.

COMPLETE plans for amplifying Geiger counter $1.00. Denker, Goodyear, Ariz.

GEIGER counter. Build your own under $15. Sensitive, economical. One flashlight cell operates for weeks. Send $1 for plans. Free uranium sample included. Phillips, 14017 Ainsworth, Gardena, Calif.

TREASURE — Metal — Mineral locators M-Scope type. Latest electronic design $75.00 up. Geiger counters—Scintillators—Mineralights for uranium prospecting $35.00 up. Fully guaranteed. Monthly payment plan available. Books "How to Be a Successful Uranium Prospector" — "For Fun and Profit"—Literature free upon request. Fisher Research Laboratory, Inc., Palo Alto, Calif.

BUILD Your Own Geiger counter. Simple, guaranteed plans $1.00. Box 1811, Tulsa 3, Oklahoma.

ANY Type Scintillators Geiger Counters, Metal Locators, Mineralights, free catalog. A. Stiehler, 125 W. Adams, Detroit 26, Michigan.

GEIGER counters $5.00 monthly! Write NEFD Incorporated, Box 64575, Los Angeles 64.

GEIGER Counter kits and complete models. All include radioactive sample. Send for details. Geiger Counters, Box 111, Sta. A, Hartford 6, Conn.

GEIGER Counters $29.95 to $995.00. Free literature. Amerlabs, 471 Clifton Ave., Newark 4, N. J.

"URANIUM Prospectors Handbook" $1.00. Six radioactive ore specimens, boxed, $2.50. Postpaid. Raylab, Box 534, Reseda, California.

WORLD'S Smallest most economical Geiger Counter. Patented transistor circuit. Rush Postal today for amazing details. Transi-Mite Labs, Manteo, N. C.

78 WATCH REPAIRING

WATCH and clock repairing books for hobbyists. Free information. North American, Dept. 25-D, 2320 N. Milwaukee, Chicago 47, Illinois.

AMATEUR—Professional Watchmakers' Supplies; Correspondence instruction; repairing. Bengal Company, Culver City, California.

WATCHMAKERS' Tools, Materials, Supplies, Watches. Catalog. Gales, Box 1000, Chicago 90, Illinois.

79 MISCELLANEOUS

BUY Wholesale thousands nationally advertised products at big discount. Free "Wholesale Plan." American Buyers', 631-E Linden, Buffalo, New York.

MAKE extra money. Address, mail postcards. Spare time every week. Write Box 14, Belmont, Mass.

I Average $125 weekly selling books by mail! So can you! Start sparetime! Work home! Cooper, 248-T Taunton, Buffalo, N.Y.

WHOLESALE! Huge selection, famous brand products. Sensational discounts! Large catalog. Unusual business plans included. Consolidated Distributors, 21-18, Lafayette, Paterson 15, New Jersey.

BUY Surplus wholesale. Catalogue 25c (refundable). Ort, Thomasville, 22Q, Pa.

OUTDOOR Toilets, cesspools, septic tanks cleaned, deodorized with amazing, safe, harmless powder. Easy, economical to use. Saves digging, pumping. 150,000 customers guarantee satisfaction. Details Free. Burson Laboratories, Dept. O-53, Chicago 22, Ill.

GROW Mushrooms. Cellar, shed, and outdoors. Spare, full time, year round. We pay $3.50 lb. We paid Babbitt $4,165.00 in few weeks. Free Book. Washington Mushroom Ind., Dept. 182, 2954 Admiral Way, Seattle, Washington.

BIG interesting mails three months 25c, year $1.00. Harvey Teeple, Decatur, Ind.

DIGEST-Of dynamic, factual, professionally approved, human management requirements. P. Stine, B8576 Florence, Downey, Calif.

RECEIVE Magazines, samples, catalogues. Mails from everywhere. Offers, hundreds. Get listed 25c. Rorick, Box 86-M, Cincinnati 26, Ohio.

RECEIVE Mail—Samples, magazines, catalogs, 10c. American Mailers, CalAllen, Texas.

GENUINE Mexican jumping beans, curious, amusing, 25 for $1.00. Spielman, 1147 E. Madison St., Eau Claire, Wisconsin.

GADGET Catalog, 32 pages, around 200 Gadgets 10c. Dime refunded. Saunders, 1519 W. 20th, Los Angeles 7, Calif.

LETTERS Remailed From Dallas, The Heart of Texas, 25c. Howard, 2512 Throckmorton, Dallas, Texas.

HAWAII—Scenic picture post cards in color, twelve different $1. Box Seventeen, Nyack, N.Y.

300 BIG Mails guaranteed, samples, offers, plans, propositions, 12 months listing, $1.00 (refundable). Wright Publications, 2276 Hubbard, Memphis 8, Tenn.

SAVE 30% on your food bills. Free details. Clifton, Ephrata 308, Washington.

80 PERSONAL

"HOW Can I Find Out?" You Can! Information confidentially developed. Any matter, person, problem. World-wide. Officially licensed. Established 1922. William Herman, 170 Broadway, New York.

RUPTURED? Something different. Light, Cool. No leg straps. No elastic. No pressure on hips or spine. Inexpensive. Worn by Mechanics, Farmers, Doctors, etc., everywhere. Guaranteed. Write Hand-Lock Products, Dept. P.S., Preston, Ont. Canada. Established 1893.

LOSING your hair? Send for "The Truth About Hair Care." No obligation. Damon, 123 West 65th, New York City.

DETECTIVE'S Opportunities. Detective particulars free. Write Wagoner, P-125 West 86th, New York 24.

MEXICAN Legal Matters. A. Espejos, Box 234, Hermosillo, Sonora, Mexico.

BIG Mail! Attractive Offers! Magazines, etc! 6c! Filmer, 9102 Marion, Pharr, Tex.

MAKE extra money. Address, mail postcards. Spare time every week. Write Box 14, Belmont, Mass.

LATEST Methods treating piles, fistula, colon-stomach disorders. Write for free book. McCleary Clinic and Hospital, E-144, Excelsior Springs, Mo.

PSORIASIS Victims; Hopeless? New Discovery! Free Trial Offer. Write Pixacol, Box 3583-S, Cleveland, Ohio.

REMAILS. Chimley Rock area 25c. Garson Lindsay, Spindale, N. C.

SLEEP-Rite Earstoppers insure sound sleep. Free sample. Raymond Dow, 2922—164th, Flushing 58, N. Y.

DALLAS Remails 25c, information. Service. Lee, 2616 Sharon, Dallas 8, Texas.

INFORMATION Furnished by Research Specialist—Edna Whiting, 929 East Washington Blvd., Fort Wayne 4, Indiana.

HAND Guide. Corrects your Penmanship in 10 hours. Write Perfect Penmanship, Box 665-35P, St. Louis, Missouri.

IF you are nervous, write The Herbmaster, Forestville 8, Virginia.

HOLLYWOOD, Los Angeles, remails 25c. Hughes, 820 No. Naomi, Burbank, Calif.

CALIFORNIA Remails. Receiving—forwarding. Reasonable. Hedgpeth, Box 830, Alhambra 24, California.

LETTERS Re-mailed 25c. Volume, Monthly Rates. Andrews, 17311 Victory Blvd., Van Nuys, California.

REMAILING 25c, forwarding and etc., special rates. Blanchard's, 9221 Russell Way, Denver 16, Colo.

HOLLYWOOD Or Los Angeles remails 25c. Art, Box 775, Inglewood, Calif.

HAVE Your letters mailed from glamorous California for 20c. $3.00 monthly address charge. Ideal. 4644-c Geary, San Francisco 18, Cal.

LETTERS Remailed 25c ea.; 6-$1.00. J. Love, 1419 E. 83rd St., Los Angeles 1, Calif.

HOW Can I get out of debt? Stop that garnishment? Save my job? You can! Free confidential details. E. Borum, 411 West Walnut Street, Kalamazoo, Mich.

MEXICAN Law. General Practice Attorney. 1203 Arizona Street, El Paso, Texas.

ARTHRITIS relief from soy beans. Not a drug or medicine. Nueblings-b, Lickerville, New Jersey.

"INTERESTING Mails"—25c keeps your mail box full three months. Bentz, Desk-K/84, Chatawa, Mississippi.

MEXICO Remails 30c. Air 50c. Five postcards $1.00. Campos, Apartado 21304, Mexico City.

LETTERS Remailed from Phila. 25c each. 6 for $1.00. Clark, 515 Woodcliffe Rd., Upper Darby, Pa.

RESEARCH All subjects import export Sloan Cash, 230 Herbert, Waterloo, Ontario Canada.

MINNEAPOLIS, St. Paul, Milwaukee, Chicago Help Wanted columns $1.00 Airmailed. Spielman, 1147 E. Madison St., Eau Claire, Wisconsin.

BORROWING By mail. Loans $50 to $600 to employed men and women. Easy, quick. Completely confidential. No endorsers. Repay in convenient monthly payments. Details free in plain envelope. Give occupation. State Finance Co., 323 Securities Bldg., Dept. E-227, Omaha 2, Nebr.

"PSYCHIC Dominance. Rule others with your thoughts." $2. Delmar Wisdom, 833-86 Sunnyside, Chicago-40.

WANT Ads Any Major City Airmailed $1.00. Remails, N.Y.C. 25c. Tanmac Co., Box 68, Harrison, N.J.

BE Somebody! Get somewhere! Request free positive thought motivation plan. Easy, quick results. Write: Applied Christian Psychology, Inc., Box 1924-C, Louisville 1, Kentucky.

TEXAS—Letters remailed 25c, received and forwarded 50c. "Cowpoke", Box 10142, Dallas 7, Texas.

WONDERFUL Youth Bible! Stamped addressed envelope brings details. Bibles, Dayton, Virginia.

SPARE Time co-publishing pays big money. Sample & details 25c. Schenkel, 211 Redford, Oreland, Pa.

• You can save time and money on electrical repairs with Trouble Tracker Jr. Check basic continuity of low-resistance power-off electrical circuits by simply touching Trouble Tracker Jr. to bothersome wiring. A flash of the built-in light pinpoints where your trouble lies.

See for yourself! Try Trouble Tracker Jr. at your neighborhood electrical store, write us for the name of your nearest dealer, or, for quick delivery, send your money to Dept. P.

LINK AVIATION, INC
BINGHAMTON—NEW YORK

A SUBSIDIARY OF GENERAL PRECISION EQUIPMENT CORPORATION

New Design 1½ to 5 H. P. Walking Tractors

You just steer . . . Shaw "Du-All" does the work. Makes fun of those garden, lawn jobs. A "must" for acreages. Four rugged walking models. Two with power turn. Many features: variable speeds, run between or astride rows, independent tool control takes care of uneven rows, etc. Traction is tops. Wide selection of tools. Low prices will surprise you.

Powerful Riding Tractors — 5, 8, 12 H.P. You ride, it works! Models to pull 8, 10, 12, 14" plows. ¾ to 7 M.P.H. **Write Today, Free Literature,** low prices on complete Shaw Line, and name of nearest dealer. Dealer inquiries invited!

SHAW DU-ALL **Manufacturing Company**
5704 Front St., Galesburg, Kansas
668-PS N. 4th St., Columbus, Ohio

BUILD YOUR OWN CABIN, RANCH HOUSE or HIDEAWAY

For the Cost of Materials Alone!

Here's an amazing new book that shows you how to build your own cabin, lake cottage, modern ranch house, or mountain retreat at *lowest possible cost!* In all, you have 27 different, easy-to-follow plans to choose from.

SIMPLIFIED DETAILS

You don't need expensive professional help when you have *"How to Build Cabins and Ranch Houses"* at your side. This brand-new book gives you 256 pages of step-by-step instructions and hundreds of "show-how" illustrations to help you lay the foundation, build and caulk walls, construct stairs, lay floor boards, estimate costs. You'll find detailed plans that show you how to make windows, build fireplaces and chimneys, cut doors, install plumbing and lighting. You'll also learn how to prevent wood decay, build rustic furniture and lots more! It's truly a home builder's "dream book."

SEND NO MONEY NOW!

Detach and mail coupon below. When book arrives, pay postman the low, bargain price of only $2.49 (plus postage). Examine it for *a full week at our risk!* Then, if you don't agree you would ordinarily pay twice the price for such a big, jam-packed book, simply return it for prompt refund. But HURRY—get your copy while they last!

MAIL COUPON TODAY

POPULAR SCIENCE PUBL. CO., Dept. 455
353 Fourth Avenue, New York 10, N. Y.

Please send me a trial copy of *"How to Build Cabins and Ranch Houses"* today. I'll pay postman $2.49 (plus postage) on delivery. If not delighted, I may return book within 7 days for full refund.

Name.....
Address.....
City..... Zone..... State.....

☐ *Check here if you remit now. We pay postage. Same refund guarantee.*

make it with **60c** worth of sand & cement
SELL IT FOR **$20.00**

every home a prospect for these patented "LIFETIME"

CONCRETE INCINERATORS

Make big profits manufacturing rust proof, fire proof, almost indestructible concrete incinerators in your own backyard or garage . . . full or part time. Sell to home-owners, hardware, department and garden supply stores. Phila. manufacturer doing big volume with Sears, Roebuck; large department stores. Easy to follow instructions and all needed equipment supplied. Exclusive protected franchise—No competition! Territories going fast. Write immediately for full details.

Dept. PS-45, T. C. TOR, 2113 Bellevue St., Phila. 40, Pa.

BRAND NEW BLUE-STEEL

.22 cal. Blank Cartridge German AUTOMATIC, Clipload, 6 shot Repeater.

NO PERMIT REQUIRED

Latest model, not a clearance item. Gun is fully automatic, has positive safety catch, self ejecting clip. Adjustable firing spring. Machined with all the care and precision of West Germany's finest gunsmiths. Ideal for sporting events, theatrical performances, etc., 4" long, perfectly balanced. Satisfaction guaranteed. Send check or money order and save C.O.D. charges.

$7.95 postpaid

BIG THREE Inc., 1109 Sixth Ave., New York 36, N. Y.

only $95 freight incl. Write For FREE FOLDER

12 ft. SPORTBOAT KIT

Includes ready-cut parts and hardware. Models low as $39.00 freight incl.

TAFT MARINE WOODCRAFT

Dept. PS-4, 636 39th Ave. N.E., Minneapolis 21, Minn.

Zing!

SOCK-O

SUPER SLINGSHOT

SILENT • RIFLE FAST • POWERFUL • ACCURATE

Great for small game and target shooting! 45 pound pull. Big, sturdy stock. Lively, raw rubber. Sweet shooting. Free: 50 steel balls (.25 calibre), extra rubber and target. Sent by return mail. Guaranteed. *Approved by American Small Game Slingshot Association*

SOCK-O, Box 111, So. San Gabriel, Calif.

PRIVATE INVESTIGATOR

BADGE $5.98 POSTPAID

HEAVY, HIGH-POLISH BRONZE — PROFESSIONAL standard badge used by thousands of private investigators and detectives.

Individual orders filled. $5.98 postpaid.

Genuine Leather **BADGE CASE** with **I.D.** card — **$2.50.** Enclose check, cash or money order. **$1** deposit for C.O.D. **included with order — Free** list of firms hiring investigators. **Law Enforcement Agencies:** Write for quantity discounts.

DEPT. 87 **NATIONAL POLICE EQUIPMENT CO.** 806 SO. ROBERTSON BLVD., LOS ANGELES 35, CALIF.

HULL AUTO COMPASS

EVER-VISIBLE GUIDE

● Roadsigns are only partial direction help, easy to miss. You ALWAYS know directions driving by Hull Auto Compass. Hull is the famous quality name, the most used auto compass.

AT BETTER DEALERS EVERYWHERE WRITE FOR LITERATURE

HULL MFG. CO. P. O. Box 246, E-4 WARREN, OHIO

You can only do it with a SCOTT-ATWATER

EXCLUSIVE *BAIL-A-MATIC* bails your boat, is easily adapted for jobs like washing your craft down as shown. And you'll like Scott-Atwater's smooth, quiet operation; remote tank; complete shift; snap-off hood.

16-PAGE BOOKLET on all six models (3.6, 5, 7½, 10, 16, 30 h.p.) is yours free from Scott-Atwater, Mpls. 13, Minn., Dept. PS-45.

YOUR CAR DO THIS?

YOU NEED AIR LIFTS

AIR LIFTS correct 'most *any* sag — either side or the whole front end! They slip inside any coil springs not enclosing shock absorbers. Just inflate 'em with air to level and raise the front to new-car riding position. They give your *two* springs the action of *six* to absorb the punishing stress of sudden turns and stops. No more leaning, swaying, dipping or bottoming on bad bumps. AIR LIFTS ease steering and stabilize the ride while saving tires and cutting repair bills. Just ask your favorite dealer.

AIR LIFT

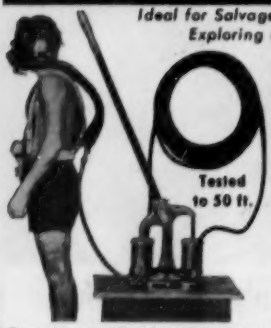
FREE . . . **Tip-packed instruction folder, *How To Stop Front End Troubles.* Write department 134**

AIR LIFT COMPANY
Lansing, Michigan

Brand New Government Release

NAVY SHALLOW WATER DIVING APPARATUS

Ideal for Salvage, Boat & Dock Repairs, Exploring and Spearfishing



19.50 Less Pump

Outfit Includes Mask, 50 ft. 3-ply Air Hose, Harness Non-return Valves

Standard U. S. Navy
HAND PUMP only $39

Big volume, double piston trouble-free hand pump. All brass and bronze parts, will not rust; heavy duty 2-braid air hose; adjustable mask and harness; full vision fog-free lenses. Effortless breathing and pumping. Durable, no upkeep. Portable, always ready for use. Completely safe. Fully guaranteed. Shipping weight, complete outfit, 65 lbs.

Also available with gasoline or electric driven air compressor.

25% Deposit on C.O.D. Send Check or Money Order

Write for Literature—Dept. PS-4

NATIONAL EQUIPMENT CO. • WILMERDING, PA.

STEP UP PERFORMANCE OF YOUR OUTBOARD

WRITE FOR OUTBOARDER'S BIBLE—our 1955 catalog. It's FREE! Contains much valuable information on how to get MORE SPEED, for racing or pleasure, from motors of 5 HP to 50 HP; better performance and load carrying capacity from any motor old or new. Easily understood recommendations enable you to choose a propeller virtually custom-built for your motor and boat combination—much more rugged and damage resistant than the original. Write NOW. Michigan Wheel Co., Dept. PS-64, Grand Rapids 3, Mich.

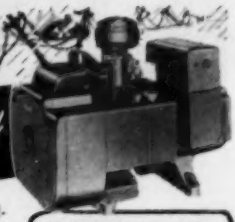
GOSH! what a boat!

In independent tests, Cadillac aluminum boats outperformed 12 leading makes in six ways with different loads and horsepower. They're roomy, light . . . built to last a lifetime. Car top models take up to 16 h.p. Cadillac exclusive: you can add front and center decks, steering wheel, windshield . . . by yourself! Write for literature on Cadillac's *complete* line of aluminum, molded plywood and cedar strip boats.

CADILLAC MARINE & BOAT CO.
156 Seventh Avenue • Cadillac, Michigan

Cadillac SWEETEST BOAT AFLOAT

Protect your home against power interruptions with an...



ONAN *Emergency* ELECTRIC PLANT

Provides dependable stand-by electricity for heating system, pumps, freezer, lights, appliances. Keeps home safe, livable. Automatic start and stop. *Find out how little it costs!*

A SIZE FOR EVERY NEED
400 to 75,000 watts. Compact, quiet-running, easy to install. Gasoline engine powered.

Write for Folder!

D. W. ONAN & SONS, INC.
3325 University Ave. S. E. • Minneapolis 14, Minnesota

FULL SIZE MODEL KITS!

Luger	$3.00
Colt .25 Auto	3.50
Colt .44 Frontier	3.50
Walther P-38	3.00
Colt .380 Auto	2.50
Submachine gun	5.95
S & W Magnum .357	4.00
S & W .38/.44	4.00

Complete, improved detail, easy to finish. The original kit. Wood with process for gun metal finish. ORDER THESE MODELS DIRECT. Ideal for den or game room.

For Catalog, Send 10¢ to:

O'BRIEN GUNCRAFT (A) P.O. BOX 657 MADISON, WIS.

RADIO CONTROL YOUR MODEL

PLANES BOATS CARS

"CUSTOM" "MIDGET" RADIO ONLY $9.98
LICENSE FREE BAND
OPERATES SAME AS $59.00 SETS INCLUDES LONG RANGE

DETAILED INFORMATION & RADIO CATALOGUE 25¢
SPECIAL "SUPPLY SOURCE DIRECTORY" & $7.00 SUPPLY COUPON $1.00
BOOK "RADIO CONTROL OF MODEL AIRCRAFT" CONTAINS 16 PLANS $3.98
RADIO CONTROL GARAGE DOOR DETAILS $1.00

TRANSMITTER RADIO, RECEIVER RADIO AND CONTROL ACTUATOR ALL 3 EASY ASSEMBLY WITH OUR PARTS AND PLANS $9.98 PLANS ALONE $1

RADIOMODELS BOX 36 DEPT. PS BALTIMORE 6, MARYLAND

SAVE MONEY ON US GOV'T SURPLUS

Save Money, Buy Surplus Direct from U.S. Government. Items that you normally could not afford. The following may be purchased at tremendous Savings. Truck, tractor, trailer, jeep, car, boat, motor, parts, tools, lathes, saws, drills, welding equipment, Office equipment, typewriters, mimeos, calculators, radio, photographic equipment, printing press, doctor, dentist equipment, Hunting, fishing camping sporting equipment, clothing. These & hundreds of other items are listed in our Publication "Surplus Sales." Price $1.00.

THE ABACUS PRESS, Box 169AAA East Htfd. 8, Conn.

Build Your Own OUTDOOR FIREPLACE

You can enjoy luscious steak fryes, roasts and barbecues economically in your own backyard with the revolutionary new ROSTRO "Build-It-Yourself" grill unit. Information FREE—or send a dime for six ornamental outdoor designs and 75 delectable outdoor cooking recipes. Dealer inquiries invited.

ROSTRO SPECIALTIES CO. Coldwater 2, Michigan

TREMENDOUS *Profits* with Hagen's *Exclusive* TEAR GAS PENCIL!

This Tear-Gas Pencil discharges smothering clouds of tear gas to instantly stop, stun and incapacitate the most vicious man or beast, an effective substitute for dangerous firearms; leaves no permanent injury. No selling experience needed. Handle as a profitable sideline . . . soon you'll sell it full time. Start now! Send $4.25 for complete demonstrating kit of Automatic Tear Gas Pencil, 10 demonstrators & 3 Powerful Tear Gas Cartridges. Not sold to minors.

SELLS EASY TO SERVICE STATIONS SMALL STORES LOAN OFFICES BANKS, HOMES

HAGEN SUPPLY CORP., Dept. P-45, St. Paul 4, Minn.

LOOK BETTER! FEEL BETTER!

USE A

Vibrosage®

ELECTRIC MASSAGER

- Professional-Type
- 4 Scientifically Designed Applicators
- Sanitary

A few minutes daily use of VIBROSAGE gives that stimulating, healthful aid to circulation . . . relief from aches and pains. Four applicators assure maximum effectiveness for scalp, face and body. Operates on 110 volt, 60 cycle A.C. *Five day trial—money-back guarantee!* If your dealer cannot supply you, send $8.95 check or money order, for prepaid shipment. Or, send $2; pay postman balance plus postage and C.O.D. charges.

BEAUTY APPLIANCE CORP., Dept. V535-D, RACINE, WIS.

GIANT BALLOONS

They're really BIG—surplus U.S. Govt. (new overage) Neoprene weather, target balloons. GREAT FUN in the backyard; at parties, picnics, dances, fairs. TERRIFIC for high school and college PROMS. They attract BIG CROWDS to business openings, civic events, conventions, exhibitions, trade shows. ORDER TODAY! Approx. inflated sizes:

3 ft. dia., 49c—6 ft. dia., 99c
13 ft. dia., $1.59—20 ft. dia., $1.95

Postage paid on prepaid orders. Calif. residents please add sales tax.

VOLUME SALES CO., War Assets Div.
Dept. S-455 3930 Sunset Blvd., Los Angeles 29, Calif.

FACTORY PRICES—15-DAY MONEY BACK GUARANTEE

NYLON AUTO COVERS

Brand-new rubberized DuPont nylon—mildew & water repellent. One side soft fabric not to scratch. Absolutely lightest and strongest cover made. Will protect against all elements. Secured with heavy elastic.

Larger Size for Caddie, Linc. etc. $1.95 extra

CANVAS AUTO COVER
(Also available)—soft 6 oz. sunfast, water, fire & mildew repellent. **14 lbs. . . $12.95.** $1.00 ship. Send for free catalog.

Give Car Model Standard Size **$18.95** plus 95c ship.

DEFENDER TEXTILE CORP., 425 B'WAY., DEPT. PS-4, N.Y. 13, N.Y.

FOR CAMP, BARBECUE, BEACH OR HOME

NEW PAULSON-WARE Aluminum Griddle adds zest, flavor to pancakes, broiled game, steaks, chops, bacon 'n eggs etc. Two-height attachable iron legs mount griddle over low or high camp fire. Use without legs on any stove or grill. Quality aluminum and copper alloy. Exclusive under-rib construction assures even heat over one or two stove burners. Easy to clean. GUARANTEED NOT TO WARP. Write if not at your dealer's.

Complete with Legs Postpaid $10.35
Griddle Only Postpaid $8.35 NO C.O.D.'S

PAULSON MFG. CORP. DEPT. P4 FALLBROOK, CALIF.

New!

12-GAUGE REPEATER WITH

C-LECT-CHOKE

VENTILATED BARREL AND CUSHION RUBBER RECOIL PAD

Model 195
12 ga.
$32.95*

Change pattern instantly. Just "dial" the choke you want. C-LECT-CHOKE is installed at factory and is perfectly coordinated with the gun. Monte Carlo stock, thumb-operated safety and a dozen other desirable features. *Priced amazingly low.*

No sales at factory

SEE THESE MOSSBERGS AT YOUR DEALER'S

Other 3-shot shotguns with C-LECT-CHOKE, VENTILATED BARREL AND CUSHION RUBBER RECOIL PAD

Model 190 (16 ga.).....**$31.95**
Model 185K (20 ga.)..... **29.95**
also, without pad and vents,
Model 183K (410 ga.)..... **28.95**
(*All $1 more west of Rockies)

FREE catalog on request

Mossberg *for accuracy*

O. F. Mossberg & Sons, Inc.
56504 St. John St., New Haven 5, Conn.

DON'T DROWN!

Be safe with this pocket-size emergency life preserver

One quick squeeze... presto! It's inflated. Clamps securely to clothing. Only $2.98 ea. No C.O.D.

Get several Res-Q-Paks today. *Ask your dealer or order direct by mail with this coupon*

THE MUTER COMPANY, *Dept. PS*
Chicago 5, Illinois
Please send me prepaid____Res-Q-Paks
NAME _____
ADDRESS _____
CITY _____

65X-130X-167X Dynascope® Reflector

TELESCOPE

1 4 inch **PARABOLIC** Mirror

2 4-power Achromatic Finder

3 Achromatic Eyepieces

4 Rack & Pinion Focusing

5 Hardwood Folding Tripod

Completely assembled, ready for use

at the unbelievable low price of only **$44.95**

F.O.B. Hartford, Conn.

Shipping Weight 12 lbs.

Express Charges collect

Amazing new telescope for amateur astronomy, precision engineered to professional standards. Both pleasure and serious study of the stars now possible for everyone. Has features previously found only on instruments selling for more than twice its low price. Scientifically constructed yet simple to operate.

Money Back Guarantee

Illustrated brochure on Request or

Send Check or Money Order, Dept. PSD2

CRITERION MANUFACTURING CO.

331 CHURCH STREET • HARTFORD 1, CONN.

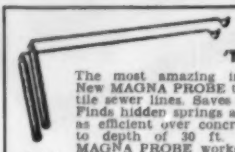
PENN YAN BOATS . . .

New Striptites!

All Wood—No Soaking, Work-Free!

Outboards, inboards, Cartops®, Trailboats, canoes, sailers—all beautifully finished, masterfully built. Types for fishing hunting, cruising. Choose from over 100 models of fine, small watercraft.

Free **CATALOG:** 44 pages, color illustrations. Write TODAY! Penn Yan Boats, Inc., 35th St., Penn Yan, N. Y.



DON'T DIG

'TIL YOU KNOW WHERE

The most amazing instrument you've ever seen! New MAGNA PROBE traces water, gas, and metal or tile sewer lines. Saves hours of unnecessary digging. Finds hidden springs and underground streams. Just as efficient over concrete as bare ground. Sensitive to depth of 30 ft. Works indoors or outdoors. MAGNA PROBE works by scientific principle of dissimilar metals and elements attracting and opposing one another like magnetic electricity. So simple—a child can use it. GUARANTEED TO WORK!

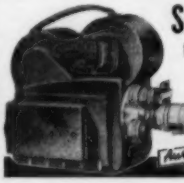
ONLY **$2.98** Post-paid

Complete with easy-to-use instructions

TODAY! Send check or money order (no C.O.D.'s) to:

THE MAGNA PROBE CO.

6024 Mayfield Road Cleveland 24, Ohio



SHOOT TELEVISION FILMS

FOR YOUR LOCAL TV STATION...make Extra Profits with the "Cine-Voice" Sound-On-Film 16mm Camera. $695.00 Write for free information.

BERNDT-BACH, Inc.

6956 Romaine St., Hollywood 38, Calif.

SOUND-ON-FILM SINCE 1931

Also ADULT 2 Passenger "ESHELMAN" SPORT CAR

1/5 The Price of any other Auto

70 Miles per Gal.

Free Catalog

ESHELMAN BOAT TRAILERS

Also BOATS & MOTORS

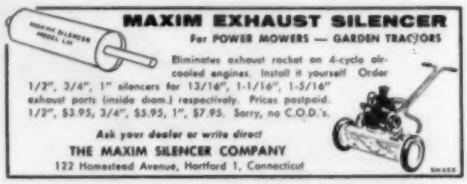
NONE HIGHER $79

SAVE MONEY! GET OUR SPECIAL COMBINATION PRICE!

Trailer shipped complete with Hi-speed wheels, tires, tongue, hitch, etc. Write for Catalog.

ESHELMAN Dept. BT-44

109 Light St., Balto. 2, Md.; 333 N. Michigan Ave., Chicago 1, Ill. 6087 Sunset Blvd., Los Angeles 28, Calif.



MAXIM EXHAUST SILENCER

For POWER MOWERS — GARDEN TRACTORS

Eliminates exhaust racket on 4-cycle air-cooled engines. Install it yourself. Order 1/2", 3/4", 1" silencers for 13/16", 1-1/16", 1-5/16" exhaust ports (inside diam.) respectively. Prices postpaid. 1/2", $3.95, 3/4", $5.95, 1", $7.95. Sorry, no C.O.D.'s.

Ask your dealer or write direct

THE MAXIM SILENCER COMPANY

122 Homestead Avenue, Hartford 1, Connecticut

BOAT-ARMOR*

IDENTIFICATION AND QUALITY PROTECT YOU!

For Leak Proofing All Boats — Making New Ones

FINEST FIBERGLASSING MATERIALS AND METHOD!

NEW! 'BLU SHEEN' CLOTH. Immediately identified, exclusive blue tint! GUARANTEES top quality, uniformity, weight, weave, Volan finish.

BOAT-ARMOR SUPER RESIN. Non Sag. Non Run. Specially matched with 'Blu Sheen' glass cloth for super adhesion, finest leak proofing, longest boat life.

ASK YOUR MARINE DEALER how BOAT-ARMOR reduces maintenance cost and work on all types of boats. If Boat-Armor is not available in your area, write us for FREE BROCHURE.

**Reg. U.S. Pat. Off.*

GLASS PLASTIC SUPPLY CO.

Dept. P-3, 333 W. ELIZABETH AVE., LINDEN, N. J.

HY-SCORE PELLET PISTOL

NO PUMPING **$19.95** Single shot

LONGEST BARREL (10¼") **$22.95** 6 Shot repeater.

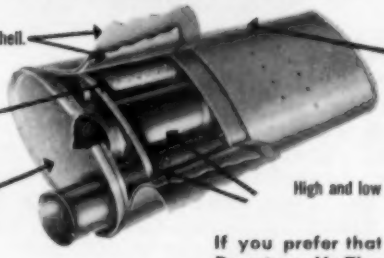
The nearest thing to a regulation firearm. The man-size grip of a LUGER . . . 3 lb. match trigger pull . . . match target accuracy . . . effortless to load and economical to use!

CAL. .177 OR .22

See your dealer or write Dept. SP-4 for literature

HY-SCORE ARMS CORP. BROOKLYN, N. Y.

SAVE UP TO $8 WHEN YOU BUY SILENTONE WORLD'S BEST MUFFLER



Ordinary mufflers silence your engine by throttling its power. Remember, every pound of muffler back pressure wastes 2 hp of engine output. Silentones are scientifically designed to keep back pressure at a minimum, give you the performance you want, the mileage you expect. Leaktight ⅓ heavier steel construction makes Silentones safe and last thousands of miles longer. They're individually engineered for your car. Install Silentone® yourself—save up to $8.

If you prefer that deep mellow tone—hear how Dynatone Mufflers sound on your car. Your store has a recording. Dynatones are engineered, not packed. Cost far less than Hollywood types. Dynatone duals and headers available for use with *any* type muffler.

Write for your free copy of the interesting booklet "Carbon Monoxide, Your Car and You."

SILENTONE MUFFLERS

Dept. 4D, Toledo 1, Ohio

Sold only by America's Leading Automotive Chain Stores

GUNS

12 MODELS "AUTHENTIC REPLICAS"

START YOUR COLLECTION TODAY!

Colt Cobra .38

Newest firearm in Colt line. Compact in design. Used by detectives and police officers throughout USA where quick action is paramount. Six shot.

One of the most versatile weapons ever made. Carried by officers as side-arm. Semi-automatic. Could be fitted to special stock and used as rifle.

German 9MM Luger

- **Reproduced in Actual Size, Design and Balance.**
- **Made of Solid Cast Aluminum**
- **Finished in Gun Metal Black**
- **"He-Man" Trophies for Den, Rumpus Room, Cabin, Etc.**

COLLECTION INCLUDES:

Russian Tokarev	Spanish Moxley
German Luger	Belgium Automatic
Czechoslovakian Pistol	German P-38
Italian Brevettata	Frontier 44 Colt
German Mauser	Colt 45 Automatic
Japanese Nambu	Colt Cobra 38

Send Cash, Check or Money Order.
(In Calif. add 3% Sales Tax)
Sorry, No Canada Orders or C.O.D.'s

ONLY $2.00 each postpaid

LYTLE NOVELTY CO.

2656 Fashion Ave. Long Beach 10, Calif.

JITTERBUG

"THOUGHT I'D HOOKED A FREIGHT CAR"

"Two bass on two casts," writes Jim Wolfe, South Bend, Ind., "and the big one (7 lb. 1 oz.) the largest I ever got in 35 years of fishing. I was casting a black Jitterbug at the edge of heavy lily pads along shore." Jitterbug's famous gurgling, paddling, wobbling surface action makes the big ones strike viciously. Casting size (5/8 oz.) or Peanut size (3/8 oz.) or Spinning and light tackle size (1/4 oz.) —$1.25 each. Musky size (1-1/4 oz.)—$2.00 each.

FREE WRITE TODAY FOR YOUR BIG FREE ARBOGAST COLOR CATALOG OF BAITS—FULL OF PICTURES OF CATCHES

FRED ARBOGAST COMPANY, INC.

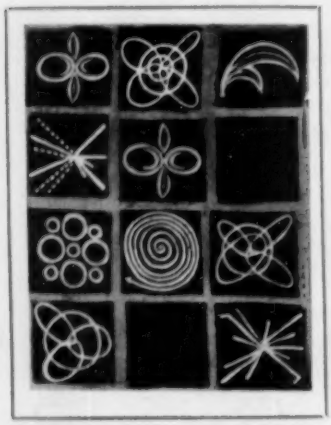
2344 WEST NORTH STREET • AKRON 3, OHIO

POPULAR SCIENCE MONTHLY'S . . . Last-minute news & notes

YOU GET EXTRA HORSEPOWER AT HIGH SPEED with a new coupling for your car's fan and generator. It's a centrifugal clutch that permits slippage at high speeds, when accessories otherwise steal more engine power than they need. Lipe-Rollway Corp., Syracuse, N.Y., developed it...THE ARMY HAS A DREAM TRUCK made entirely of aluminum, even to wheels and axles. The Chrysler-built T55 weighs 6,000 pounds less than similar models. It has a 200-hp. air-cooled engine with fuel injection, and an automatic shift...AN ALL-MAGNESIUM AIRPLANE is being tested by the Air Force. One advantage: The supply of magnesium is inexhaustible--it is extracted from sea water.

CONCRETE BLOCKS WITH DECORATIVE FINISH ALREADY ON THEM now make it easy to build a completed wall in one operation. Some blocks have surface designs, others come in colors. One type has a glazed, tilelike surface... BALL-POINT LEAD PENCILS--they never need sharpening --are now on the market (Scripto, Parker). They work like ball-point pens but use liquid graphite instead of ink. Their writing is erasable.

SHOULD YOU USE HEAT OR COLD TO KILL THE PAIN after a tooth extraction? Makes no difference, a study at University of Pittsburgh indicates--one is as good as the other...A HELICOPTER SHOOTS PAINT AT BUFFALOES to tag the big animals for study of their migrations across a Canadian game preserve... EXPLODING ATOMS DECORATE THE DRAPERIES at Sweden's Gustav Werner Physics Institute. The Institute's head, Nobel Prize winner Theodor Svedberg, couldn't find suitable fabric, so he designed his own. Prof. Svedberg calls his pattern (shown at left) "Atomics."...A NEW RADAR IDENTIFIES AS WELL AS DETECTS airplanes as far off as 200 miles. The beam triggers an automatic radio that broadcasts an identification code. Lake Central Airlines uses the Melpar development.



NEW BOOKS BY PSM CONTRIBUTORS include: "Radio-Control Handbook," by Howard G. McEntee, published by Gernsback Publications, 25 W. Broadway, NYC; "The Story of Tire Beads and Tires," by Walter E. Burton, McGraw-Hill Book Co., 330 W. 42d St., NYC.

"I won the 1954 NASCAR Stock Car Racing Championship on the same 5-RIB CHAMPIONS we use in our family car!"

Mrs. Petty and their sons Maurice (L.) and Richard.
The family home is in Randleman, North Carolina.

—says Lee Petty

1954 CHAMPION—NATIONAL ASSOCIATION FOR STOCK CAR AUTO RACING

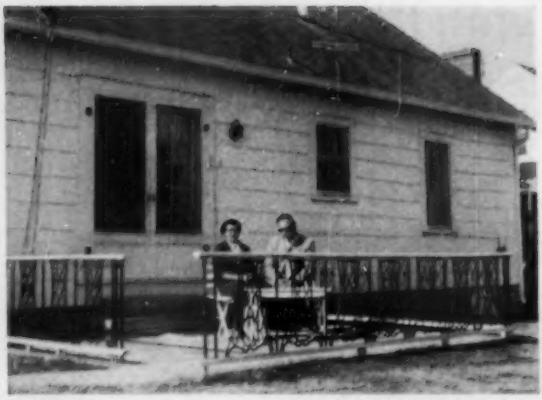
"Stock car racing teaches a lot of things about how spark plugs contribute to good automobile performance.

"I've found that to get the most power and economy from your car, the spark plugs must be in GOOD CONDITION, the CORRECT HEAT RANGE and INSTALLED PROPERLY. That's why you should stop in and have your Champion dealer give your spark plugs a three-way check.

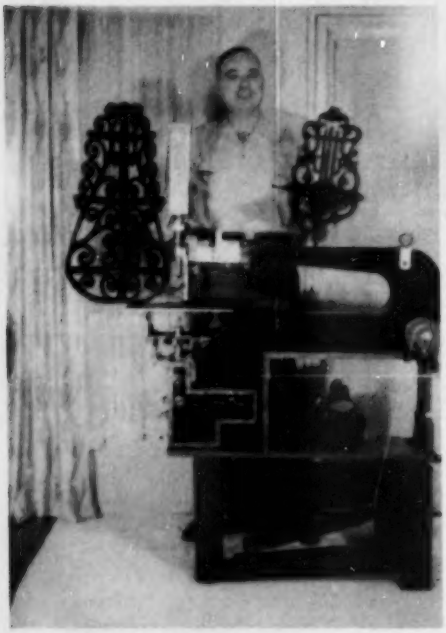
"If you're not already using Champions, have the man put in a set. I've given those full-power, 5-RIB Champions all kinds of punishment in stock car racing, and they've never let me down. Try them in *your* car—I know you'll like the difference they'll make in your engine's performance."

CHAMPION SPARK PLUG COMPANY, TOLEDO 1, OHIO

CRAFTSMEN AT WORK



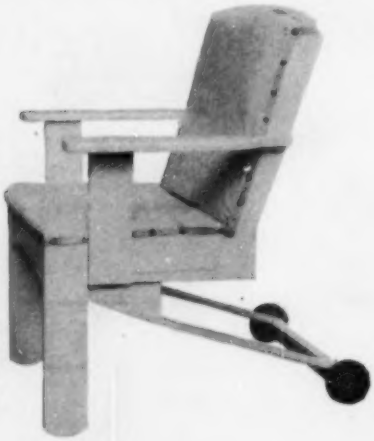
Novel Fence Encloses Patio. A supply of treadle sewing machines inspired Paul Jolly, a sewing-machine dealer of Glasgow, Ky., to fence in his patio with the iron-grille stands. The grilles were screwed to a top wooden rail and set in slots in a bottom rail. Between them and at corners he used ordinary pipe.



Pedal Controls Jigsaw Angle. Intricate scrollwork is done by Charles Gaines of Vallejo, Calif., on a jigsaw he built himself. Instead of turning the work to cut complex patterns, he changes the angle of the blade by means of a foot control.

Washer Motor Opens Garage Door. Taking the motor drive transmission from an old Bendix automatic washing machine, Alex R. Minelli of Hibbing, Minn., uses it to operate a chain drive for opening and closing his garage door.

He installed the motor on the floor of the garage attic, and just below it on the ceiling located the limit box, clutch and relay box along with an 8′ track and door linkage. Operation is by a key switch which he installed in the driveway.



Chair Rocks on Springs. Built by E. J. Pelletier of Retsil, Wash., for $5, this rocking chair utilizes flat springs for its rocker. Construction is chiefly of scrap stock, with wheels and axle of hard maple. The springs are oak boards, but they are soon to be replaced with spring steel.

"all in favor of quiet... say Evinrude"

● It's unanimous . . . the "Quiets" have it! For *quiet* boating is winning the votes on waters everywhere! And to the most enthusiastic owners in outboard history, quiet *means* EVINRUDE . . . the quiet purr of Evinrude *Whispering Power!* Along with *quiet* there's luxurious *smoothness*. Vibration and "boat shake" are magically gone. Every ride is smooth as sailing!

Today you can choose a Whispering Power Evinrude for any hull, small fishing boat to smart family cruiser. *There's electric starting, too*—with the brilliant Big Twin—the motor that "wrote the book" on big motor performance and finger touch starting. See your Evinrude Dealer—look for his name under "Outboard Motors" in your phone book. Time payments available. **CATALOG FREE!** Write today for full-color catalog of the complete Evinrude line. **EVINRUDE MOTORS,** 4593 N. 27th St., Milwaukee 16, Wisconsin.

A Division of Outboard, Marine & Manufacturing Co.
In Canada: Mfd. by Evinrude Motors, Peterborough

all are quiet!

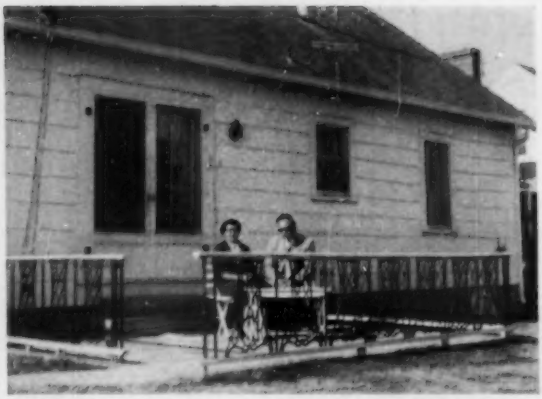
ELECTRIC BIG TWIN 25 *Aquasonic*, h.p.* $525†
BIG TWIN *Aquasonic*, standard model.....$430
FASTWIN *Aquasonic*, 15 horsepower.....$347
FLEETWIN *Aquasonic*, 7½ horsepower.....$235
LIGHTWIN *with Fisherman Drive*, 3 h.p.....$145

*All ratings OBC certified at 4000 R.P.M. tested in conformity with SAE test code.
†Prices FOB factory subject to change without notice.

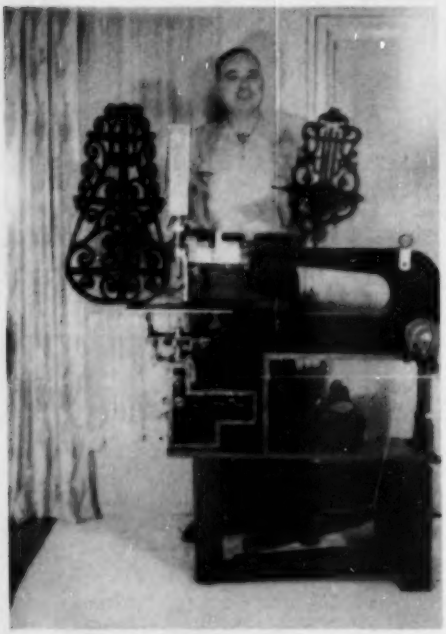
Evinrude

Pioneers in **quiet** *Outboard Motors*

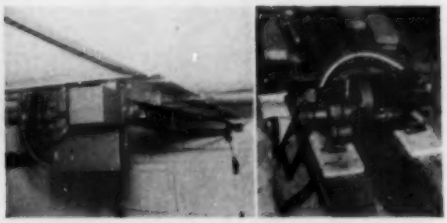
CRAFTSMEN AT WORK



Novel Fence Encloses Patio. A supply of treadle sewing machines inspired Paul Jolly, a sewing-machine dealer of Glasgow, Ky., to fence in his patio with the iron-grille stands. The grilles were screwed to a top wooden rail and set in slots in a bottom rail. Between them and at corners he used ordinary pipe.

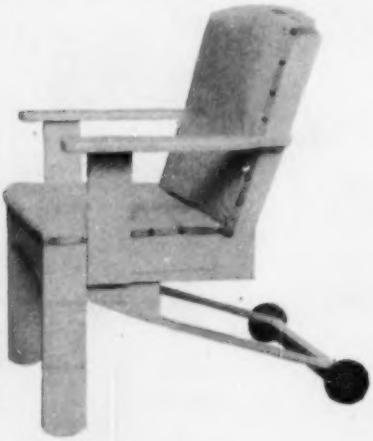


Pedal Controls Jigsaw Angle. Intricate scrollwork is done by Charles Gaines of Vallejo, Calif., on a jigsaw he built himself. Instead of turning the work to cut complex patterns, he changes the angle of the blade by means of a foot control.



Washer Motor Opens Garage Door. Taking the motor drive transmission from an old Bendix automatic washing machine, Alex R. Minelli of Hibbing, Minn., uses it to operate a chain drive for opening and closing his garage door.

He installed the motor on the floor of the garage attic, and just below it on the ceiling located the limit box, clutch and relay box along with an 8′ track and door linkage. Operation is by a key switch which he installed in the driveway.



Chair Rocks on Springs. Built by E. J. Pelletier of Retsil, Wash., for $5, this rocking chair utilizes flat springs for its rocker. Construction is chiefly of scrap stock, with wheels and axle of hard maple. The springs are oak boards, but they are soon to be replaced with spring steel.

"all in favor of quiet... say Evinrude"

● It's unanimous . . . the "Quiets" have it! For *quiet* boating is winning the votes on waters everywhere! And to the most enthusiastic owners in outboard history, quiet *means* EVINRUDE . . . the quiet purr of Evinrude *Whispering Power!* Along with *quiet* there's luxurious *smoothness.* Vibration and "boat shake" are magically gone. Every ride is smooth as sailing!

Today you can choose a Whispering Power Evinrude for any hull, small fishing boat to smart family cruiser. *There's electric starting, too*—with the brilliant Big Twin—the motor that "wrote the book" on big motor performance and finger touch starting. See your Evinrude Dealer—look for his name under "Outboard Motors" in your phone book. Time payments available. **CATALOG FREE!** Write today for full-color catalog of the complete Evinrude line. **EVINRUDE MOTORS,** 4593 N. 27th St., Milwaukee 16, Wisconsin.

A Division of Outboard, Marine & Manufacturing Co.
In Canada: Mfd. by Evinrude Motors, Peterborough

all are quiet!

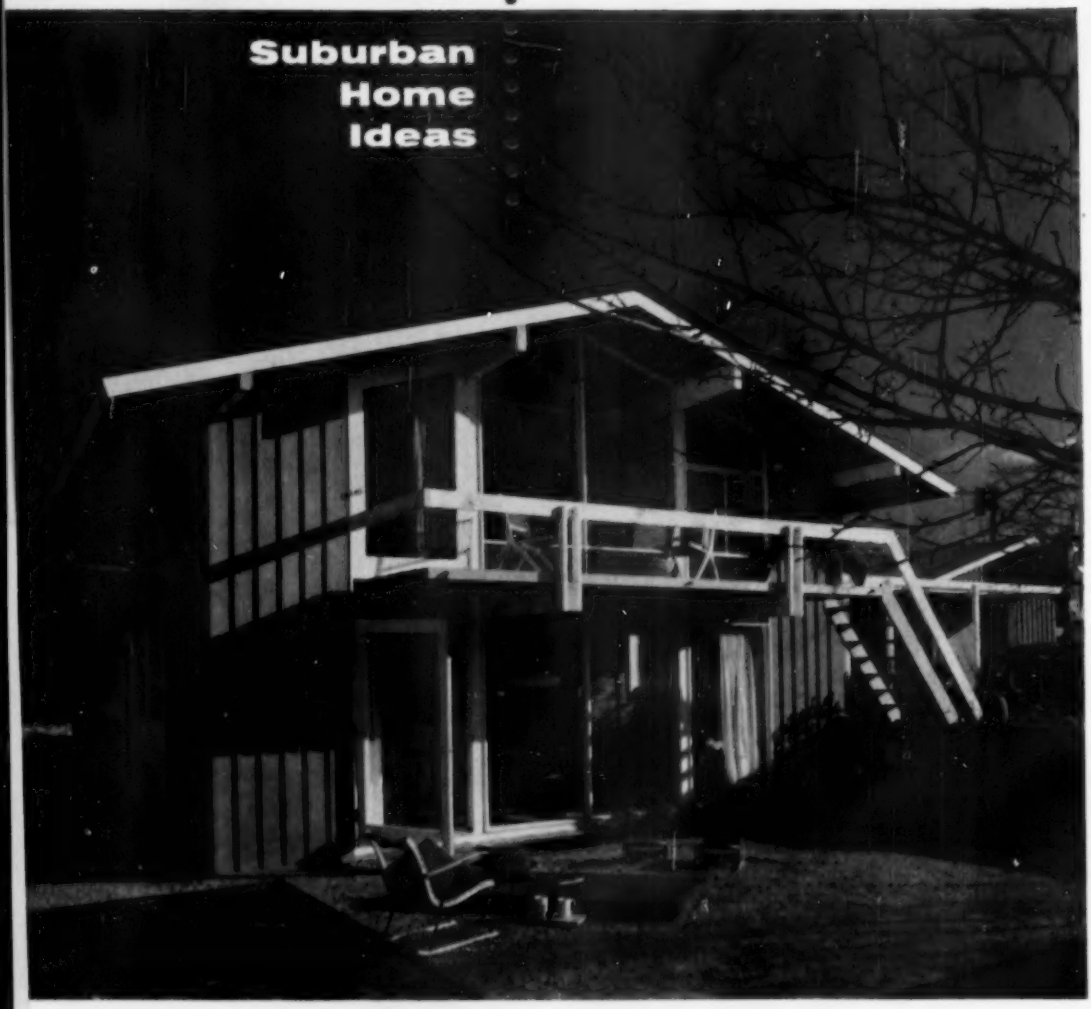
ELECTRIC BIG TWIN 25 *Aquasonic,* h.p.* $525†
BIG TWIN *Aquasonic,* standard model.....$430
FASTWIN *Aquasonic,* 15 horsepower.....$347
FLEETWIN *Aquasonic,* 7½ horsepower.....$235
LIGHTWIN *with Fisherman Drive,* 3 h.p.....$145

*All ratings OBC certified at 4000 RPM tested in conformity with SAE test code. †Prices FOB factory subject to change without notice.

Evinrude

Pioneers in **quiet** *Outboard Motors*

Architects



"Best development house" expands from the inside

1 A split-level, this low-cost Techbuilt house is designed so that it can grow with the family without costly outside additions. It is built around a core consisting of utilities and immovable fixtures such as stairs, chimney, fireplace, bathrooms. The rest of the space is free and flexible. All partitions can be moved at will, thus increasing or decreasing either living or sleeping areas to fit a family's varying needs throughout the years. Architects: Carl Koch and Associates, Cambridge, Mass.

salute 7 fine homes

Low-cost houses and mansions are becoming more beautiful as U.S. suburbs continue to grow.

THE great exodus of American families from cities to suburbs, and from rapidly congesting suburbs to those just emerging from fields and woods, is changing the nation's appearance. It has spawned the century's biggest and longest construction boom. Since 1940, it has added 15,000,000 residents to areas 10 to 40 miles from the hearts of U.S. cities.

This year the building industry expects 1,300,000 new homes to be built. Some think this figure will be matched every year for the next five years.

Not only more, but finer, homes are rising. Pictured here and on the next two pages are seven homes that were chosen as outstanding by a panel of architects and building experts.

Awards of Merit from the American Institute of Architects were won last year by the designers of six of these houses. A prized First Honor Award went to the striking, custom-built residence shown below. Pictured in color at left is "the best development house."

First Honor Award home is mirrored in a man-made pool

2 Of this residence of Mr. and Mrs. James D. Moore, located in the semi-arid Ojai Valley in California, the A.I.A. jury said: "This house gets its special quality from a beautiful play of light and shade, the handling of materials and textures, the use of water and landscape to enrich the lives of the people who own this very handsome residence. The problem was the creation of an oasis and this was achieved." Architect: Richard J. Neutra; Dion Neutra, collaborator; Los Angeles.

Spacious activity room planned for family work or whoopee

3 In a walnut orchard at Roseda, Calif., are the Blue Ribbon Tract houses. They have three bedrooms and two baths, all on one floor. High spot of these homes is the "family" room, shown above, made from floor space usually taken up by the breakfast room, bedroom hall and service porch. Ideal as play space for the children, it also serves as mother's laundry and sewing room, dining nook for the whole family, entertaining room in the evening. Architects: Smith & Williams, Pasadena, Calif.

Glass gives big-room look

5 The three bedrooms in this Hollin Hills, Va., house are small, but outside glass walls give an illusion of space. The sleeping area is separated from the living zone by a service core. Architects: Charles M. Goodman Associates, Washington, D.C.

Passageway is put to work

6 A long corridor giving access to four bedrooms is no waste space in the Sunshine Meadows homes, Santa Clara, Calif. It houses the laundry facilities, water heater, broom closet and storage space. Architects: Anshen & Allen, San Francisco.

Hollywood hilltop home has open view in all directions

4 This city home, although only four blocks from busy Hollywood Boulevard and in the middle of a thickly populated residential district, offers all the privacy and charm of country living. The house is so placed on its hilltop lot that a visitor, approaching by a spiral road, cannot see the house until he is almost on top of it. This made possible the use of large window areas on all sides to take advantage of magnificent views. Architect: George Vernon Russell, Los Angeles.

Stilts give upper floor a lake and mountain vista

7 This low-budget house, built for a young Seattle couple, faces the Cascade Mountains and Lake Washington, but from the ground the view is blocked by one-story houses in front of it. Raising the living area one flight above the ground, however, made it high enough to look over the tops of these view-obstructing homes. There is a balcony off the living room and, running on two sides of the house at the upper level, a window washer's walk. Architects: Bassetti and Morse, Seattle.

Split-level houses are

Here are the PROs and CONs of this versatile and popular design that fits house to lot.

By John L. Springer

IN MANY sections, builders report, new houses designed with split levels now outsell one- and two-story houses by a margin of five or six to one. Operators of some million-dollar developments have stopped building conventional houses in favor of splits. Here, living and sleeping areas are not on the same floor, as in ranch homes, or separated by a full flight of stairs, as in two-story houses, but are a mere half-flight of stairs apart.

Houses are being split in different ways. Some are split sideways, with one section of the front higher than the other. Some are split from front to back and look like ranch houses in the front and two-story colonials from behind. Others, split from back to front, have a deceptive Cape Cod look.

"What's good and bad about a split-level?" I asked architects and realty salesmen. Here's how their score sheet adds up:

PRO It is ideal for a problem lot—and since most bargain lots have a terrain, water or rock problem, it often provides an easy solution where every dollar counts.

In a typical split design, half the house is built over a crawl space. The other part is raised half a story to rest over a cellar area. But the footings for the cellar are generally level with those for the crawl space, so little excavation is necessary. If the land slopes, you place your cellar on the downside and avoid some of the cost of buying fill.

RANCH-STYLE SPLIT

CON A split-level adds little to a level lot where excavation is easy—building one on a level plot may create dirt-moving problems.

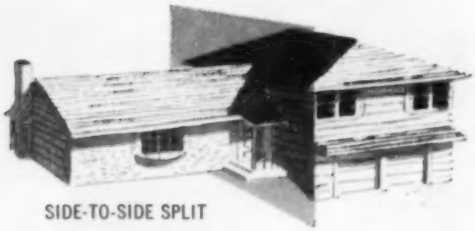
PRO By keeping half the cellar above grade, the split-level makes it possible to use windows generously, avoiding the dank darkness common in older-style houses. In Eastern housing developments, this space is generally used for a garage, laundry area and recreation room.

CON The extra space of a split-level is a needless expense if you cannot use it effectively. In the South and on the West Coast, year-round weather may be mild enough so that you do not need a closed-in garage or an indoor recreation room for children or grown-ups.

PRO Some splits, especially those broken from side to side, give a big-house look. Half the house has a two-story appearance.

CON Artistically, the side-to-side split is not generally as attractive as a one- or two-story house. Houses split from front to back do retain much of the artistic appeal of ranch and colonial homes, but appear smaller.

best-sellers nowadays



SIDE-TO-SIDE SPLIT

PRO A split-level enables you to pack more house on a lot. "Many persons object to the all-on-one-floor living of a ranch house, preferring to keep sleeping and living quarters apart," says Louis Licht, president of the Lane Realty Co., sales representatives for 22 developments in the New York area. "Splits provide this convenience because generally a half-flight of stairs separates the bedrooms from noise-making areas."

CON "Splits require more lumber than ranch houses and are usually harder to frame," says Herman H. York, architect for the fashionable Windmill Farms development in Westchester County, N. Y. "Generally, in a split-level, you have two separate roof sections to frame and join. Arranging so that you have adequate headroom in half a flight of stairs is troublesome."

PRO Most modern homes, except those in the lowest price range, are now built with two bathrooms. This creates a plumbing problem for the average ranch house with attached garage. In a split-level, plumbing lines can be run in the wall where the house splits, making it possible to serve two or even three bathrooms, laundry and kitchen with the same sewage and water-supply lines.

CON "Split-level may be inconvenient if there are not enough bathrooms," says Mr. York. "In a one-story house, the bathroom is generally accessible from both living and sleeping areas. In the split-level with a recreation room, you would need bathrooms on different levels to get the same convenience."

PRO Split-level design is ideally suited to a house with three or more bedrooms. Most architects place bedrooms and baths over the garage-recreation room area, and the space needed for both levels is usually about the same.

CON Many families want only two bedrooms. The space below may then be too small for both recreation room and a garage. "Split-level designs are extremely rare in houses selling below $12,000," says Frederick Jackson, mortgage officer of the Dime Savings Bank of Brooklyn, which finances tens of thousands of new homes every year. "Builders have found that the relatively small area gained by raising the bedrooms half a flight may not compensate for the additional floor, ceiling and roof framing needed."

When you weigh all the pros and cons, what do you gain from a split-level?

"A split-level with the same amount of living area as a ranch can be built on a level lot and will give you the recreation room as an extra," says Mr. York. "On a lot ideally suited for a split, the gain is even greater.

"The way home seekers respond to the idea of a separate recreation room indicates that it is no passing fad," he adds. "It will be popular as long as there are small children and television." END

Suburban Home Ideas

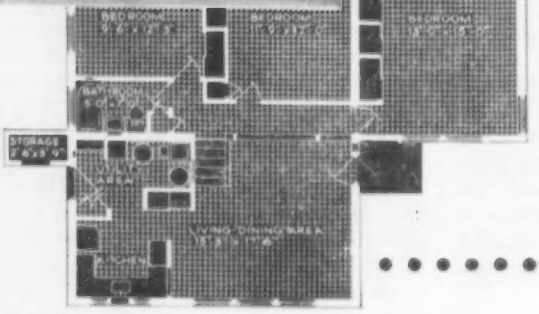
A split-level designed to cut costs

Model shows how tricks used in mass housing can pay off even when you build a single home.

By Herbert O. Johansen

HOUSES obviously are cheaper by the dozen. But suppose you don't want just another pea-in-the-pod house in a big development. What good, to you, are the cost-cutting tricks that have been worked out by the mass builders?

Plenty, says the U. S. Government. The



Uncle Sam built this "farmhouse" that would grace any suburb

SIMPLICITY OF DESIGN and construction is a big factor in keeping the cost of this split-level way down. It's intended to be built as a basic two-bedroom unit, but provision has been made for adding a third bedroom, which is shown in this floor plan and also in the cover drawing (reproduced at left). At the same time, interior doors and other features might be added. The basic unit was built by the Department of Agriculture at Beltsville, Md.

MAJOR COST-CUTTING FEATURES: 1. widely spaced rafters and exposed plank ceiling; 2. walls of oversize brick, not covered on the inside; 3. partitions do double duty; 4. kitchen and other doors are eliminated; 5. wall between lower and upper levels is of redwood, needs no painting; 6. fluorescent lighting trough at top of wall is also a planting box.

proof: A handsome, two-bedroom brick house constructed on a sloping site in Beltsville, Md.

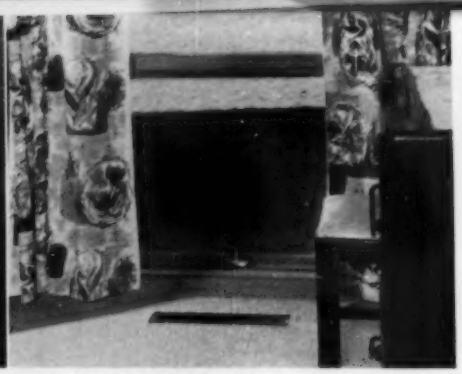
Solidly built despite its low cost, and thoughtfully planned for comfortable living, this home—intended originally only as an experimental modern farmhouse—might well have been designed for any young family planning to build in the suburbs on a small budget.

Where labor and materials come fairly high, as they do in this area 15 miles north of Washington, D. C., it can be built for $9,800. The split-level plan provides for adding a third bedroom, as the family grows, for an additional cost of about $2,000.

"How was this cost-paring done?" I asked J. Robert Dodge, supervisory architect with the Department of Agriculture, which built the house near the dairy farm of its Beltsville research station. "What was the one big money-saving item?"

"You've got it in reverse," he told me. "No one item will save enough—unless

EXPOSED WIRING, painted to match ceiling, is unobtrusive. Nonmetallic cable, permitted in most states, is used. The bubble lamp pulls down for dining and Junior's homework stint.



WARM-AIR OUTLETS for heating are placed close to the walls. This one, at the bottom of a floor-length window, creates a blanket of warmth in front of the large glass area.

you leave off the roof or a couple of walls. You have to cut costs on almost every item—labor and materials—that goes into the house. That was one of the first things we learned."

Mr. Dodge then took me on a leisurely tour of the house and pointed out some of the features that kept costs down.

Bricks used for the outside walls are oversize, 6″ thick and 12″ long, known as S.C.R. (Structural Clay Research). Conventional bricks are 4″ thick and 8″ long. With S.C.R., the walls need only one thickness of brick, as against a double wall with ordinary brick. And since the S.C.R. is longer, a bricklayer can lay a course faster. Also, these bricks have holes in them. This provides air space that prevents condensation, making it possible to leave the brick bare on the inside of the house. Savings: less brick, less labor, no inside furring.

Exposed plank-and-beam ceilings save, first of all, the cost of a false ceiling. Then, the rafters, or beams, are spaced four feet on centers instead of the normal 16 to 20 inches. That means less lumber for rafters, fewer labor dollars to put them up. To compensate for the heavier loads the rafters have to carry, heavier rafters are used—four-by-eight instead of two-by-six.

There are no doors, except the outside ones and those to the bathroom and closets. Since the bedrooms are on the upper level, out of view from the living area, it was felt that none was needed for a young couple with one or two children. For added privacy, curtains are cheaper than doors, and easier to hang.

Partitions pay their way. All, except one between the bathroom and the smaller bedroom, serve a functional purpose. Double partitions separating the two bedrooms form closet space, with sliding doors. The one between the kitchen and living room has a window through which the housewife can talk to her family or guests as she cooks, and then serve the meal when it is ready.

Warm-air heating ducts, six inches square, are made of paper—heavy paper,

[*Continued on page 266*]

How to Get the Plans

WORKING drawings for the Department of Agriculture split-level house may be obtained through the Extension Agricultural Engineer at many State Agricultural Colleges. Ask for Plan No. 7128, consisting of 10 sheets. The price varies in different states, but the average cost is 25 cents a sheet. If plans are not available in your state, send inquiries direct to the U.S. Department of Agriculture, Farm Buildings Section, Beltsville, Md. You don't have to be a farmer to get them.

Does your house need a garden pool, a terrace, rain-proofing? A special section of Home Improvement Ideas begins on page 199.

POPULAR SCIENCE
REG. U. S. PAT. OFF. Monthly

Indianapolis Racer Hits the Highway

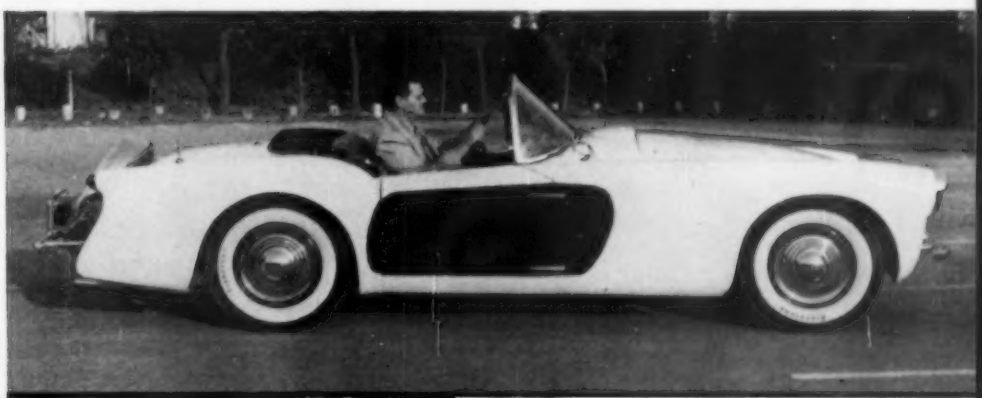
Now you can have a slick, ground-hugging speedster that comes straight from the famous Speedway—with road comfort added.

HOW would you like to own the racing car in which Billy Vukovich won the Indianapolis 500-mile classic? Great, you say—but not very practical unless somebody throws a speed track in with the deal.

That is why Frank Kurtis, builder of more "500" winners than any other sheet-metal bender, has turned this streak of lightning into a comfortable roadster that will behave like a gentleman on the highways or in traffic—but can still scat away at better than 125 miles an hour if you get in the mood for a bit of competition racing.

His newest venture in car building is this 500-M, a sports job with an unusually low silhouette and smooth-flowing lines. You can pick it out by the distinctive black, recessed doors.

For bad weather, there is a plastic-fabric top. Even with the top up, the car stands only 49½ inches high. It is 171 inches long on a 99-inch wheelbase, and

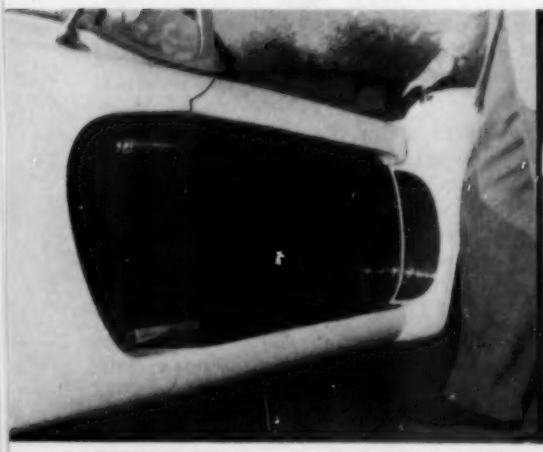


weighs 2,500 pounds. Still, there's plenty of room in the cockpit for the long-legged.

Patterned after the Billy Vukovich Indianapolis winner is the combination steel and glass-fiber body, mounted on a tubular-steel chassis. When driving gets rough, especially in road racing, torsion-bar springing, front and rear, levels the bumps and makes for stability.

A steering ratio of 12:1 and a 16-foot turning-circle radius means good driver control when cornering at high speed. Tread is the same, front and rear: 56 inches. Tires are 6.70 by 15.

Kurtis plans to produce the 500-M in quantity in his Glendale, Calif., factory. With a choice of Cadillac or Buick engines, Hydra-Matic or Dynaflow transmissions, the price is about $6,000. Or you can buy any of 22 parts, singly or in combination, and build your own.



RECESSED DOORS are inset for a reason: Grilles at either end, usually closed, can be opened for racing. One exhausts air from front brakes, the other pulls air into rear brakes.

SINGLE FRONT BUMPER of tubular chrome-moly emphasizes low silhouette. The grille is designed to deliver lots of air to scoops for cooling brakes and tires at high speeds.

SIX INSTRUMENTS, including tachometer, line the dash. There is a choice of transmissions. Here control for Hydra-Matic is mounted on a tunnel between driver and passenger seat.

ENTIRE ENGINE COMPARTMENT is open for inspection or repairs when front-hinged hood is raised. (That's a Caddy mill in this car.) Wraparound windshield gives wide visibility.

Giant Steel Fingers Pick Up Logs by the Fistful

THIS mechanical Paul Bunyan clutches 50-ton bundles of logs, lifts them out of the Columbia River and drops them on a mill deck 63 feet above. Its mighty fists—tandem grapples weighing 14 tons apiece—open and shut hydraulically. The oil pumps and driving motors above them are waterproofed so the steel fingers can dive for loads that sink. Crown Zellerbach lumbermen strap the logs into bundles to make it easier to latch onto them if they become waterlogged.

Electronics Stunt Makes Music, Another May Keep You Cool

Two new marvels lifted from the bottomless bag of electronics are electrifying musicians and electronizing refrigeration.

The music synthesizer above can make like a hillbilly band or a symphony orchestra. As the engineer punches a keyboard backed with two tons of radio tubes, coils and dials, RCA's electronic musician imitates any single instrument or combination. It can even mimic a specific singer or "invent" musical sounds never heard before.

The experimental electronic refrigerator below uses the Peltier effect, until now a laboratory curiosity. Current passing through a junction of dissimilar metals does the cooling; no pumps or flames are needed. RCA says ceiling panels of these wires could one day air condition homes.

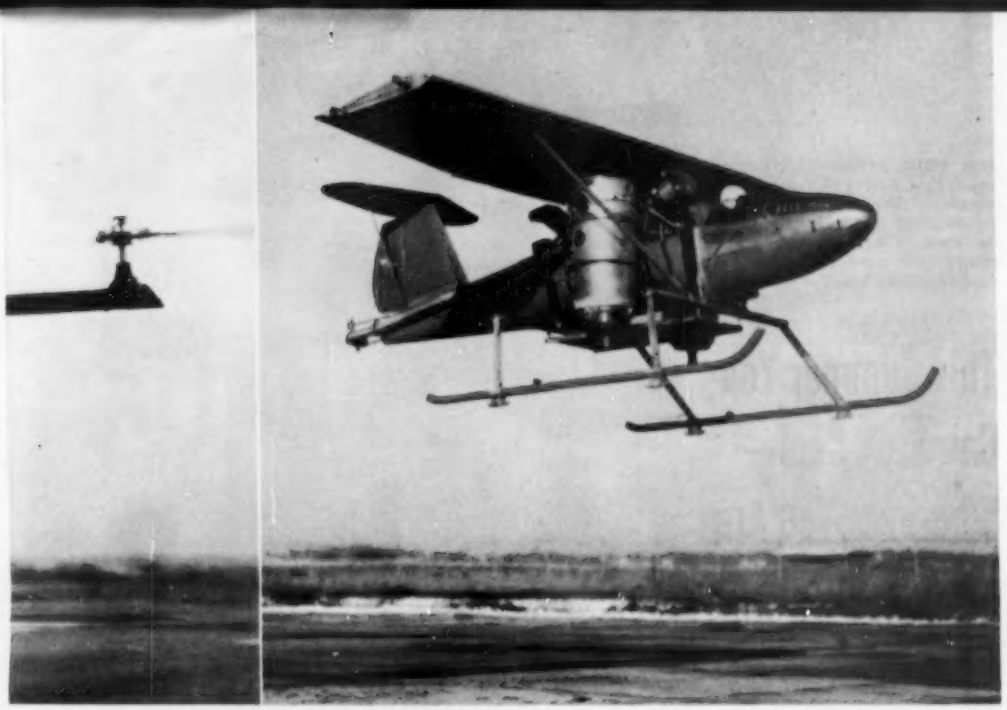
Helicopter or Airplane?

A CROSS between helicopter and airplane, these strange craft take off straight up and then fly straight ahead. They always stay level, do not have to take off and land sitting on their tails as the Pogo plane does (PSM, Oct. '54, p. 140).

Bell Aircraft's VTOL (above right) has

Bobbing Decoy Really Lures 'Em

PLANT this mechanical duck in the water with regular decoys and the wisest old bird will drop down to feed. Run by a battery, the decoy ducks its head to imitate the feeding movements of a live duck. The riffling of the water stirs the other decoys to action. Robert M. Riley of 2212 Onyx St., Eugene, Ore., makes the mechanical decoy.



These Craft Are Both, Flying Straight Up, Then Ahead

twin turbojet engines under its wings. The jets point down for take-off and landing, swivel to a horizontal position for forward flight. When the plane is flying vertically, control is maintained by compressed air nozzles in wing tips and tail—the ordinary control surfaces won't work until the craft has gained normal forward flying speed.

A propeller-driven convertiplane (above left) is being tested by Transcendental Aircraft Corp. It looks and works like a helicopter while taking off and landing. The propellers and shafts flop forward in the air to pull the plane forward.

▶▶▶Bacteria and fungi from the soil "fly" the Atlantic from west to east in moving air. Scientists from Canada's McGill Univ. found organisms in every air mass sample.

▶▶▶230,000 furred, scaled or feathered passengers flew BOAC planes last year. One "flying ark" took aboard a tiger, a leopard, storks, mongooses and cobras (stowed far apart), hyenas, monkeys, squirrels, bears and—appropriately—a flying fox.

Station Wagon from Britain Is Easy to Load

A BARGAIN-PRICED station wagon with unusually accessible cargo space is Britain's latest bid for the U.S. autoist's dollar. Hillman calls it the Husky. It sells for less than $1,500 at any U.S. port and can carry four passengers plus 250 pounds of baggage, or, with rear seats folded away, two passengers plus 560 pounds. Instead of a tail gate, it has a full-size side-swinging rear door.

FOR YOUR HOME: This compact model, Carrier Corporation's Summer Weathermaker, needs no existing ducts. It comes with its own. There's no water bill either—the outdoor refrigerating unit is air-cooled.

This Summer You Can Stay Cool—Wherever You Are

WHETHER you're vacationing or at home, this year's selection of air conditioners promises summer comfort. Leading makers' 1955 models include cooling units for cars, trailers, and anything from a single room to the whole house. Pictures on this page illustrate just a few examples of the wide range of designs available.

FOR YOUR TRAILER: "End-table" Carrier model (right) permits closing doors and windows against the heat and dust of trailer parks.

FOR YOUR BEDROOM: Tucked behind window drapes or Venetian blinds, General Electric's room cooler (below) fits flush with wall.

FOR YOUR CAR: Combination cooling and heating system, offered by Frigidaire for use in General Motors cars, is shown here installed under '55 Chevrolet hood.

An expert tells you

How to Wear Artificial Clothes

By Gardner Soule

C. W. (BEN) BENDIGO, 43, lives in a synthetic world. His job is developing synthetic textiles. He buys clothes of nothing else. He uses synthetic materials wherever he can: for boat covers, blankets, curtains, fishing lines, and a long list of other articles. He is, in short, the synthetic man.

For better and for worse, synthetics

Ben Bendigo and his all-synthetic wardrobe

FILES OF SYNTHETIC MAN hold samples of artificial cloth instead of the usual letters. Ben, dressed in synthetic suit, and his secretary, Dorothy Gordineer, check swatches.

have changed Bendigo's whole life. They brought him, for instance, the worst day of his business career: the day he dyed an assistant vice-president blue.

Ben works for the American Cyanamid Company. He asks its executives to test new fabrics by wearing them, and he had given the assistant v.p. a blue shirt to try out.

The color was not fast, and it ran off onto the man. Once upon the man's skin, though, nothing would get it off. The assistant vice-president had to wear it off. He stayed blue for weeks.

Despite the dismay he felt at this incident, Ben proceeded to build a complete synthetic wardrobe of his own. "I had to," he said. "People were always asking, 'What's that suit you have on?' In my job, I simply could not answer, 'One hundred percent wool.' "

Today Ben can dress from the skin out through his topcoat entirely in synthetics. His undershirts and shorts, his business shirts, his ties, his suits, his socks, even his breast-pocket handkerchief are artificial.

His artificial suits effected a devastating change in his relationships with cleaners.

Ben does his own cleaning now. Does it, mostly, in men's rooms from coast to coast, and you may meet him at it any day behind the door marked "Gentlemen" in Houston's Shamrock Hotel, New York City's Biltmore, Boston's Parker House or Miami's Flagler. He is the stocky, gray-eyed man scrubbing a spot off his suit at the washstand. He first moistens the soiled place, then works up a lather with a handkerchief or paper towel, washes the soil away with the lather, then rinses.

This is the way Ben washes a shirt

USING TEPID WATER, Ben first soaps particularly the collar, underarms and cuffs. Then he soaps the shirt all over.

AFTER RINSING, (no wringing) he hangs shirt on wooden or plastic hanger. Then he tugs tails to get out wrinkles.

NEXT MORNING, shirt is perfectly dry, and collar is smooth. Without ironing, Ben can wear shirt anywhere.

By the time of his next appointment, Ben says, the darkness due to moisture will have disappeared. The suit will be dry.

Once he had a crisis, though. He dumped blue-black ink on a light-colored suit. The ink frightened him because its label said "permanent." It washed right out, though, with plain water—no soap.

Synthetic suits also changed Ben's pressing arrangements. Today he uses a coat hanger instead of ringing for the valet.

New Wrinkle—No Wrinkles

He hangs up his suits every time he takes them off—much more important, he says, in the case of artificial clothes than in the case of wool suits. It helps hold the crease, but mainly it gets the wrinkles out.

Ben has had his American Cyanamid job for three years, long enough to make him the synthetic fabrics expert in his own family—and to change his life at home.

For one thing, his wife, Irma, no longer goes with him to help him pick out a new suit. Instead, he now accompanies Irma to help her select *her* clothes.

For another thing, he has a new argument ready in case Irma wants to toss out any of his old clothes. He happened upon this just the other day.

He noticed, at the end of a season's wear, that a three-year-old artificial suit had "a better crease than most suits do when they come back from the cleaner."

"That synthetic suit," he says, "had improved with age. It is a better performer now than when it was new."

For trips up to 10 days, Ben takes only the synthetic suit he's wearing, plus an extra shirt, a set of underwear and a pair of socks.

Each night in his hotel room he does his washing—shirt, underwear and socks.

TEST FOR ARTIFICIAL SLACKS: Ben had a shoeshine boy wear these. It took eight months for the boy to wear a hole through the knee that was on floor during each shine.

He soaps, then rinses; he wrings out underwear and socks; he hangs up the shirt without wringing. He has timed himself, and says his washing takes about five minutes.

Another way synthetic clothes have changed Ben's life is that he now likes formal dinner parties. He wears a white orlon-and-rayon tuxedo. "I can perspire all I want," he says, "and it still looks good." For another thing, for the first time in his life he always has something to talk about. "You always have," he says, "if you're wearing synthetic clothes."

Nylon? Never!

Bendigo got into the textile business before he got into high school. At 13, he was a bobbin boy in a Northern mill. At 16, he was a foreman. Twenty years ago, after college, he decided synthetics were the coming thing. He decided, too, some years ago, something he'd just as soon forget now—that there would be no future for nylon except in women's hose.

His synthetic wardrobe today shows how far off this guess was. He owns all or partly nylon bathing trunks, gloves, socks, shirts, shorts, a scarf, and a storm suit. His boat covers are partly nylon. His fishing lines are all nylon. "You don't

[*Continued on page 256*]

GIs Get Radar That Pinpoints Enemy Mortars

ARMY ground troops have a new radar set designed to defend against mortars instead of airplanes. The radar "sees" mortar shells in the air—after they have been fired—and follows their path. The information on the shells' path is fed to a computer mechanism that figures out where the path started: the location of the mortar itself. Our artillery can then go into action and destroy the mortars.

The new mortar radar, developed by the Signal Corps and Sperry Gyroscope Co., is already in service with U.S. troops in several parts of the world. Early models were battle-tested in Korea, where they helped stop a major enemy offensive.

New Nylon Armor to Shield GIs

GIs will get more protection from an easier-to-wear armored vest developed by the Quartermaster Corps. Made like a super-Dagwood sandwich—12 layers of heavy nylon laminated with plastic, plus plastic film, plus nylon covering—it shields nearly all the upper torso without hampering action.

Swinging Bed Tests Heartbeat

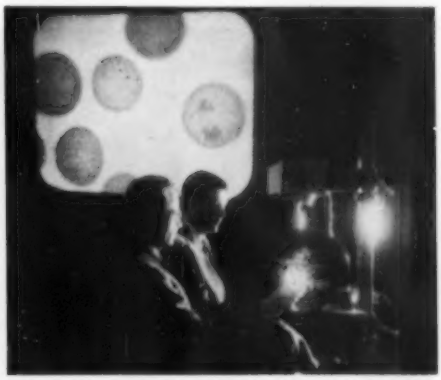
EVERY time the sergeant's heart pulsates, this delicately suspended bed swings a bit, measuring the strength of his heartbeat. The Air Force's Aero Medical Lab uses the instrument—called a ballistocardiograph—to test the effect that pressurized flying suits have on the heart.

Big Trains Made Safe from Small Boys by Curved Bridge Rail

As IF things weren't tough enough already, a kid can't even lean over the bridge and watch the trains roll by any more. At least not on the Washington-Baltimore Parkway. The solid guardrail in this photo arches in a smooth curve eight feet over the sidewalk, to stop boys from tossing things onto the Pennsylvania Railroad tracks below.

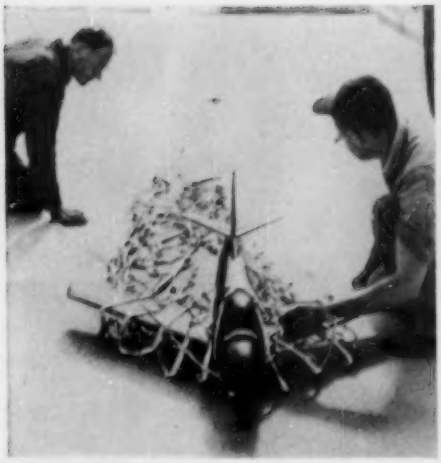
Wheel Folds to Let You Get In

IT'S easier—for stout parties anyway—to get behind the wheel of this version of the high-performance Mercedes-Benz 300 SL. The steering wheel is hinged to drop down out of the way while you climb into the driver's seat. This model of the German-made sports car with the upswinging doors was displayed recently in Brussels, Belgium.



TV Gives Microscope a Boost

THOSE big balls on the screen above are tiny bits of pollen, magnified in full color 4,000 times by a new combination of microscope and color television devised by CBS. A small color TV camera connected to a microscope feeds a color TV projector, which can put a 15,000-times-enlarged picture on a lab or lecture-room screen.

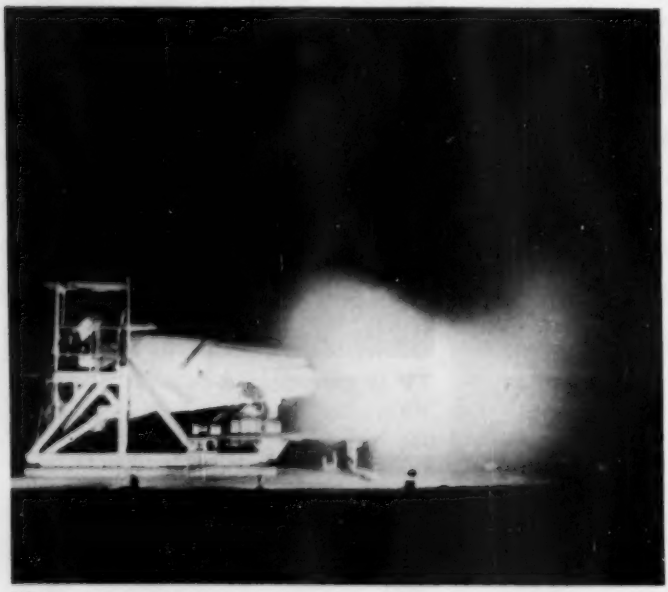


Net to Brake Plane on Runway

THIS model jet was catapulted into a net at 126 m.p.h. and came to a stop undamaged. Such barriers—dubbed rabbit catchers—may soon be stretched across runways like giant tennis nets to halt big Sabres and Scorpions. If a jet fails to become airborne or the pilot overshoots the strip, the plane will plow into the stretchable nylon net. The All American Engineering Co., Wilmington, is working with models before testing a full-size barrier.

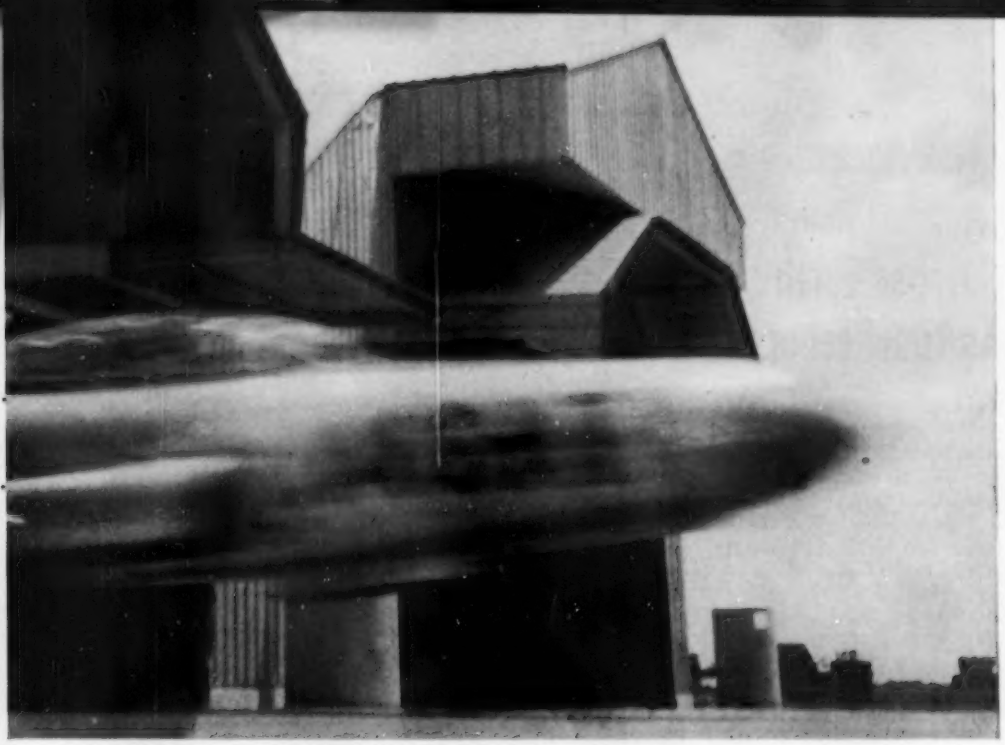
Revved Up Before It Leaves

JUST 2½ minutes after the scramble bell sounded a fighter alert, this speeding Starfire was in the air. The jet fired up inside



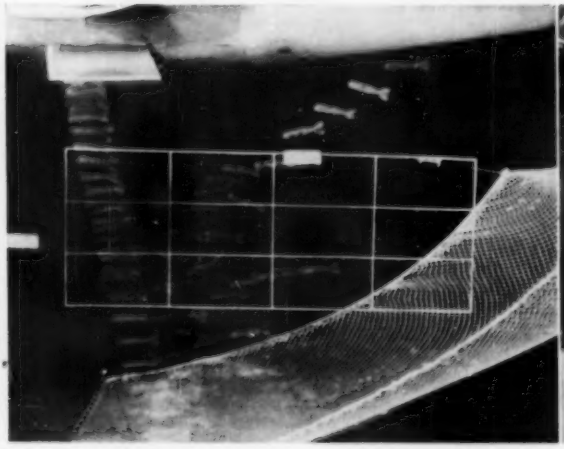
Fighter Planes Get Faster Gun To Fire Rockets

A SOLID sheet of flame whips out from a new kind of rocket launcher being tested by the Air Force. The T-110 gun automatically fires its rockets at a fast clip when the fighter plane gets within range of its target. Shown at left being tested in a Northrop F-89 Scorpion at Eglin Air Force Base, Fla., the new gun was developed by Armour Research Foundation of Chicago. Range and rate of fire were not revealed.



the Hangar, Jet Fighter Gets Off to a Flying Start

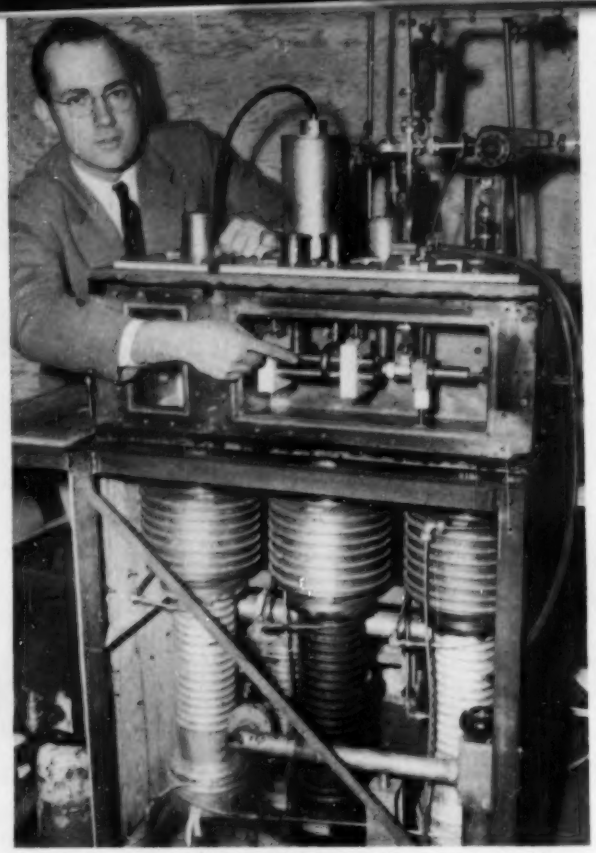
the hangar—which has doors at both ends for this purpose—and taxied to the runway under its own power for a quick getaway. It does not quite take off from the hangar, although the blurred photograph seems to show the wheels already retracted.



Multiple Exposures of Tiny Bombs Show How Big Fellows Behave

To FIND out how big bombs behave when they cut loose from jet bombers, Boeing engineers take multiple-exposure shots of tiny bombs falling from a model bomb bay. Six slots in a whirling disk on a still camera (above) admit light to put 10 shots on one negative. Wall grid helps observers spot drift before bombs bounce from the net.

Ultra-Accurate Atomic Clocks Surpass Earth As Timekeepers



Atomic timekeeper Charles H. Townes demonstrates a Maser.

NEW atomic clocks, soon to aid radio and navigation, keep time with fantastic precision. It would take them more than 300 years to gain or lose a second. This makes them 100 times as accurate as the best of previous timepieces.

They are even said to be 10 times as reliable as the earth itself. Slight variations in the speed of the earth's spinning, still to be fully explained, are known to lengthen or shorten a 24-hour day by amounts up to more than 1/1,000 of a second. So unwavering are the new clocks that they will tell just how much the earth is "off."

Outwardly they don't look like clocks at all. The present models have no hands or dials, because highest accuracy calls for applying their electrical timing impulses directly. There are two rival types: the Maser (short for Microwave Amplification by Stimulated Emission of Radiation) and the Cesium Atomic Frequency Standard.

The Maser was invented by 39-year-old Prof. Charles H. Townes, Columbia University physicist. To learn how well it kept time, he had to build two, and check one against the other. This test showed that the Maser was accurate to within one part in 10 billion.

Most Precise Measurement Ever Known

The test procedure itself, for comparing the clocks, was rated even higher in precision—to one part in 100 billion. Never before, it is believed, has time or any other physical quantity been measured so exactly.

An oblong brass box houses the Maser, and ammonia from a small cylinder, outside, serves as its pendulum. Within a thimble-shaped chamber of silver-plated invar alloy, the concerted vibrations of ammonia-gas molecules produce microwaves of an unvarying frequency, which flow out through a hollow metal conductor, called a waveguide, for use in timekeeping.

The new Cesium Atomic Frequency Standard differs in principle from the Maser, but the current model is said to equal the Maser's precision. It was perfected by Dr. J. H. Zacharias of MIT. Instead of ammonia, it uses the metallic element cesium. Gentle heat, applied to a pinhead-sized piece of the solid material in a metal crucible, furnishes an ample stream of cesium molecules for an almost limitless time.

Practical applications of surprising variety are foreseen for the atomic clocks. They may keep radio and TV stations on correct frequency, and provide new navigating instruments for ships and planes. The Maser also makes a virtually noise-free amplifier for weak radio microwaves, promising improved equipment for military radar and for radio astronomy.

Up-and-Down Breeches Buoy Gets Men from Blimp to Ship

If you're in a blimp and want to get down to an aircraft carrier at sea, you can now just climb into a big basket and let a winch lower you to the ship's deck below. The Navy tried the scheme recently as a means of transferring relief crewmen to and from its airships. That's the XZSG-4 above, lowering sailors to the USS *Tarawa*.

Amateurs Get New Telescopes

New inexpensive telescopes are making it easier for amateurs to get into astronomy without building their own instruments. The Dynascope above is a reflector type with a four-inch parabolic mirror, three eyepieces, view finder and tripod. It sells for about $45. Criterion Manufacturing Co., 331 Church St., Hartford 1, Conn., makes it.

Machines Speed Rail Tickets

Rooms full of machinery now produce your railroad ticket faster and easier. At the Pennsy's Philadelphia station, a clerk slides a metal plate into the machine above and out comes a printed ticket. Pullman space is handled by facsimile machines connecting a central desk to the ticket sellers. Clerks even have automatic timetables.

Omaha Mechanic Wins Horsepower Race

By Kenneth Wylie

EVEN though the nation's motor moguls continue to spar over power, jabbing increases of 10 and 15 horses at each other, they've lost the day. In Omaha recently a young mechanic and garageman let go a roundhouse that should flatten everybody in sight. His roadster has *more than four times* the horsepower of the most potent car Detroit sells today.

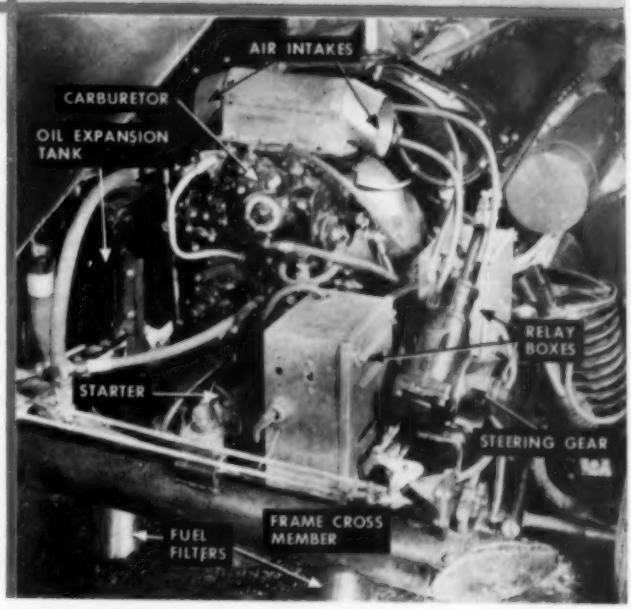
Come take a ride with him.

Out in the garage district of Omaha you stop by a canopy lettered "Cramer Brothers Service." Walking through an office packed with customers, salesmen, truckers and mechanics, you enter the garage. And there it is, like a blue and silver crack of lightning: the 1,350-horsepower, Allison-engined Cramer Comet.

It is a handsome, sculptured roadster, with a clean-drawn body hovering over heavy-duty white sidewalls—a car weighing 5,200 pounds and stretching more than six yards from front to rear.

He wanted performance. This is no racing car, even though it has burned rubber on a drag strip a few times. Tom Cramer, 32 years old and co-owner of

BOOMING UP A HILL, the Comet accelerates faster than ordinary cars can when going downhill. Cramer's stiff, underhung suspension stays flat under big torque. Snout is for carb air; radiator is in back.



MUCH MACHINERY is shoehorned under the hood. Allison engine itself, at 1,380 pounds, isn't much heavier than beefy stock-car ones. Auxiliary equipment and heavy-duty chassis bring gross weight up to 5,200 pounds. Car's showy 3.85 pounds per hp. compares with 16 to 20 for hottest stock cars.

A 1,350-hp. airplane mill lets this homemade juggernaut laze along, blowing exhaust fumes at the fastest U.S. stock cars.

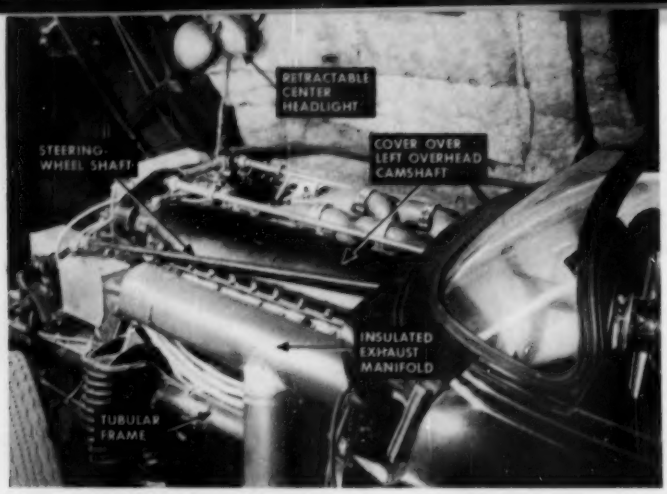
the big Cramer Brothers towing and repair shop, built it solely as a two-place, high-performance passenger car.

His aim was to "build something a little different. I wanted to see what would happen if you put a really high-powered engine in a chassis."

With a boyish grin he continues: "Of course, there's something nice about going a little farther than others have gone, trying something untested and new."

This, Cramer has plainly done. His blue roadster will spin its heavily loaded back wheels at 125 m.p.h. At this speed the 1,710-cubic-inch aircraft engine, a type that once powered such fighters as the P-38, is lazing over at a mere 2,500 revs. This gives him plenty of room to stretch, for the big mill is factory red-lined at 3,400 r.p.m. for continuous duty, with still more allowable for short bursts.

Plenty of torque. So far, clutch troubles have burned out his plans for a flat-out, hunched-down speed run. But he figures that the car might begin to level off somewhere above 250 m.p.h. Cramer feeds his beast ordinary pump gas (its compression ratio is 5.75:1) and



THUNDERBOX gave off so much heat at idle, despite oversize cooling system, that Cramer had to insulate and jacket exhaust manifolds, and pad hood. As workmanship shows, car is no lash-up. Its engine can be pulled in 45 minutes by disconnecting nine lines and four main bolts. The luxuriously designed Allison is a V-12 with overhead camshafts, four valves per cylinder, and a mirror finish on all contact surfaces.

calculates that the torque peak, occurring at 3,200 revs, gives him 1,500 pounds-feet to play with. That this is big torque indeed can be gauged from the fact that only the bulgiest-muscled 1955 cars can boast of more than 300 pounds-feet.

Cramer is a self-taught near-engineer. When he got word that there was a factory-fresh Allison to be had in Chicago, he snapped it up. From then on—construction took 10 months—it was a story of patient amalgamation of aircraft and truck parts. Automobile bits were used only when nothing else would fit. Lending Cramer help on the aircraft side was Chief Warrant Officer W. O. Leger, from nearby Offut Air Base, who worked on many an off-duty hour.

It goes backwards. The big V-12 rides turned around, compared to what it would have done in the air. It feeds its power first to a truck universal, and then to a 32-inch chrome-molybdenum steel drive shaft, another universal, a flywheel, a truck clutch, and a four-speed synchromesh truck transmission. Everything from the shaft on back rides behind the driver and passenger.

Cramer explains to you that firing it up is going to take you some time—maybe three minutes after some practice. You flip the electric door switch and climb into one of the lushly upholstered bucket seats. Not counting familiar controls or a line of circuit breakers, 32 aircraft controls and gauges stare at you.

Starting ritual. As the military says, you fire up by the numbers:

1. Going to the throttle quadrant down by your right foot, set the hand throttle at *10 percent open.*
2. Set the fuel-mixture lever at *full rich.*
3. Set the spark lever at *retard.*
4. At the small switchboard atop the drive-shaft hump, flip the master switch *on.*
5. At the main switchboard, turn the magnetos *on.*
6. Back at the smaller board, flip the fuel-boost switch *on.* Check in 30 seconds to see if you have the required 15 pounds' pressure at the mammoth carburetor.
7. Turn the primer switch *on.*
8. Move the starter control first to the *energize* notch and then bravely on to *start.* Brace yourself for a brief whine followed by a really serious roar as the V-12 blasts on.

The next thing to do is to avoid lingering in the garage. Not only does the Allison sound like a blitzkrieg, but in an enclosed space it puts out enough heat, despite special insulation on its exhaust manifolds, to brown a strudel in nothing flat.

Gauges galore. Outside, the Comet trembles gutturally. You look at all the instrument lights, like the marquee of the Bijou back home. You look at all the gauges wiggling at you: tach, mani-

fold pressure, oil pressure, oil temperature, fuel capacity, fuel reserve, oil capacity, ampere input, ampere output, hydraulic pressure, coolant temperature (left system), coolant temperature (right system).

You shift into low and trundle away. Other cars look small, even though the Comet, with a 135-inch wheelbase and 62 inches across the hip, isn't so much bulkier than some current stock plush-bottoms. Perhaps it just seems bigger because of that magnificent 80-inch hood.

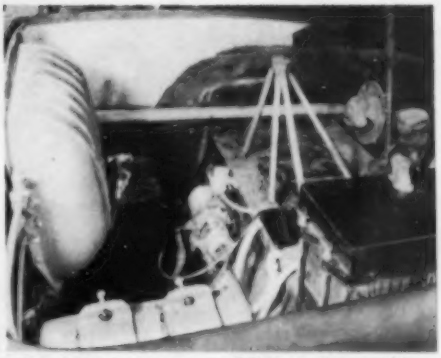
Skin grafts. As you cut across town, Cramer explains the parentage of body parts. The windshield began life as the back window of a '53 De Soto. Front fender skirts are Dodge; cowling and hood parts are Olds, with skin grafts from Buicks and Studebakers. From the doors on back, the body is mainly Buick Riviera, Cadillac, Lincoln and Ford, except the rear deck, which had as many parents as a random litter of pups.

You note admiringly that the body looks as slick as though it had come from its own dies, and that the car runs rattle-free. As you get out of town and hit it up, wind noise is practically nil, indicating that the Comet is on good terms with the air it splits. As the Allison ticks over at a 1,500-r.p.m. pace, you are hurtling down the concrete at better than 70 m.p.h. Touch the accelerator and it's no trick at all to bring the tach up to the 2,000-r.p.m. mark, at which point the scenery blurs alarmingly.

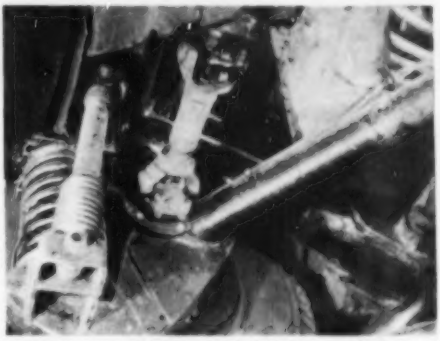
As you back off for a turn you note that the steering is tight and finger-ready. Still you can tell that this is a big bundle of machinery. There's a faint dragging noise on curves: it's one of the rear wheels, depending on which way you're turning. That's because Cramer's rear axle isn't a true differential but rather a highly modified Timken two-speed truck axle. Its ratio currently is 2.45:1.

Flat and solid. Braking the Comet slams you into a fast, flat stop. Fast, because Cramer has big Chrysler brakes

[*Continued on page 292*]

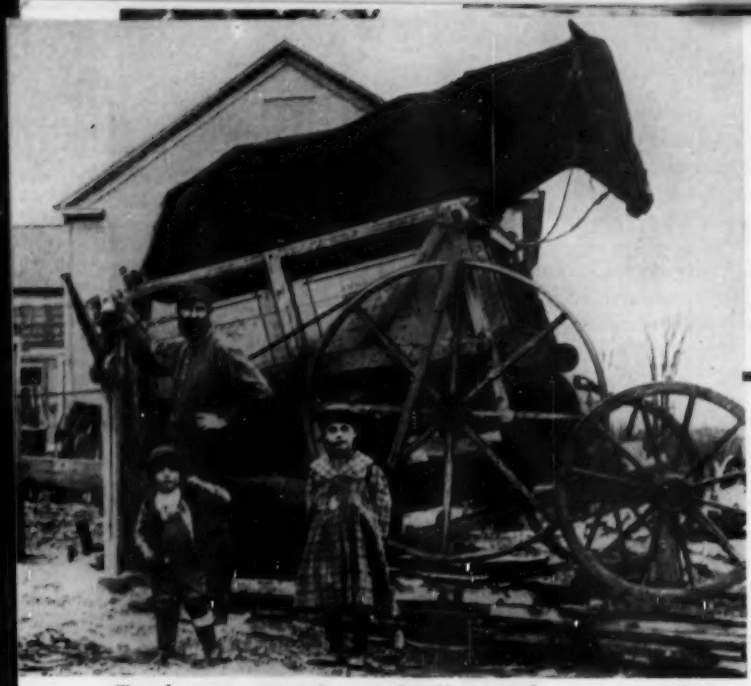


NOT MUCH LUGGAGE could fit in the auxiliary-packed rear compartment. Tank at left is part of the 35-gallon cooling system, which is 90 percent antifreeze. Lube system is also enormous: the engine needs 32 gallons of oil.



STUBBY HALF-SHAFTS feed 1,500 pounds-feet of torque to the rear wheels. Cramer didn't skimp on solidness, as this spring mount and radius arm attest. Clutch, though a beefed-up job from a big truck, has been weak link so far.

SLICK COCKPIT reveals close attention to detail. Most of the instruments and controls are aircraft types. Note throttle quadrant on side of main console. Jutting from behind it, just over lower wheel rim, is four-speed shift lever.



Two-horsepower engine running Vermont drag saw, around 1914.

What

By
Frank Rowsome Jr.

WHEN Chrysler brought out a 180-hp. engine in 1951, a 45-hp. jump that promptly boosted sales, other auto makers speedily followed suit. In the last six years, peak horsepower has shot way up. Samples:

Make	*1950*	*1955*
Plymouth	97	177
Chevrolet	105	180
Ford	100	182
Pontiac	108	180
Studebaker	102	185
Cadillac	160	270
Packard	160	275
Chrysler	135	300

The end is not in sight: most makers are reportedly planning power increases for 1956 models. And except in the case of discontinued engines, there is virtually no Detroit precedent for *reducing* power.

What is horsepower?

IT'S a measurement of the rate of doing work. Specifically, it is performing 33,000 foot-pounds of work a minute.

James Watt started it. He needed a measurement that would be meaningful to prospective purchasers of his steam engines to replace horses at working mine pumps. He observed that an average nag was good for about 22,000 foot-pounds and that an eager dray horse put out up to 33,000. He picked the higher limit, figuring shrewdly that if he slightly overrated horses, his engines would especially please their buyers.

If you feel frisky, load up your pockets until your gross weight is 220 pounds, and locate a straight flight of stairs. Discarding your dignity, race upstairs full tilt. If you can make 10 feet vertically in four seconds, you will have been exerting one horsepower en route.

What kinds of horsepower are there?

AT LEAST eight different horsepower terms are applied to auto engines:

1. Taxable horsepower: This is an anachronism, a legal figure based on obsolete design premises. But in a few states it determines the cost of your car registration.

2. Indicated horsepower: Engineers' lingo for theoretical maximum power generated, figured on combustion pressures and engine dimensions.

3. Friction horsepower: A calculation of how much of an engine's power it uses up itself.

4. Rated horsepower: A measurement, under prescribed laboratory conditions, of an engine's output. It's the advertised figure.

Horsepower Really Means

Cadillac 270-hp. engine, 1955.

5. *As-installed horsepower:* Detroit lingo for what may be delivered to the transmission in a car on the road.

6. *Wheel horsepower:* What's available at the far end of the power train to make a car go.

7. *Road-load horsepower:* What's needed to keep a modern car moving at constant speed on a level, windless road. It varies greatly with speed.

8. *Accelerating horsepower:* A calculation of what's left, after deducting road-load demands, to accelerate a car. It varies greatly with speed.

How do they measure rated horsepower?

THIS is done on an engine dynamometer, a hydraulic or electric device for absorbing and measuring power. It also reports the engine speed at which power is produced.

The power of a gasoline engine varies greatly with its speed. At idle, even big engines give only a little power. At moderate speeds, they give only a third or so of their nominal output. Modern engines generally have to wind up to an excited 4,500 or so revs before they put out their rated power. They'll turn a little faster than their peak-power speed, but output will fall off a little.

Must I drive at extremely high speeds to use all of my engine's power?

YES, in high gear. If you stay in low, you can "peak" an engine at moderate car speeds—34-39 m.p.h. in most cases. But an engine sounds so hysterical at maximum-output revs that you won't like it.

It isn't strictly accurate, however, to think of an accelerator as a car's horsepower controller. The throttle governs horsepower only to the extent that an engine is free to speed up to its most powerful speed. Suppose you have an engine that peaks at 250 hp., provided it can wind up to 4,400 r.p.m. If you load it severely at low speeds—try to get up a steep hill in high gear, say, without downshifting—the engine will only give the full-throttle power for the r.p.m. it can reach. This may be just a small fraction of the rated amount.

How accurate are manufacturers' advertised horsepower figures?

THEY are quite unrealistic, but they are roughly comparable. All makers stick pretty close to a Test Practices Code established by the Society of Automotive Engineers. But engineers study the code for loopholes like tax lawyers working over a new revenue law. Air cleaners, generators and fans are often taken off engines under test; manifolds are carefully worked over "to be sure the foundry didn't give us a rough one"; and manifold heat valves are shimmed tight lest a wisp of warmth get through to weaken the charge. One testing room is reported to have applied vacuum to the exhaust of engines under test, a procedure that can make the most docile engine put out like a cocained horse.

But auto makers keep a sharp eye on each other, and the effect of individual code interpretations is comparatively small. Most test engineers queried recently, though indignant about "those

[*Continued on page 260*]

Driving Detroit's Most Powerful Car

The Chrysler 300's speedometer is calibrated to 150 m.p.h., and belting the accelerator feels like blasting off with a TV spaceship.

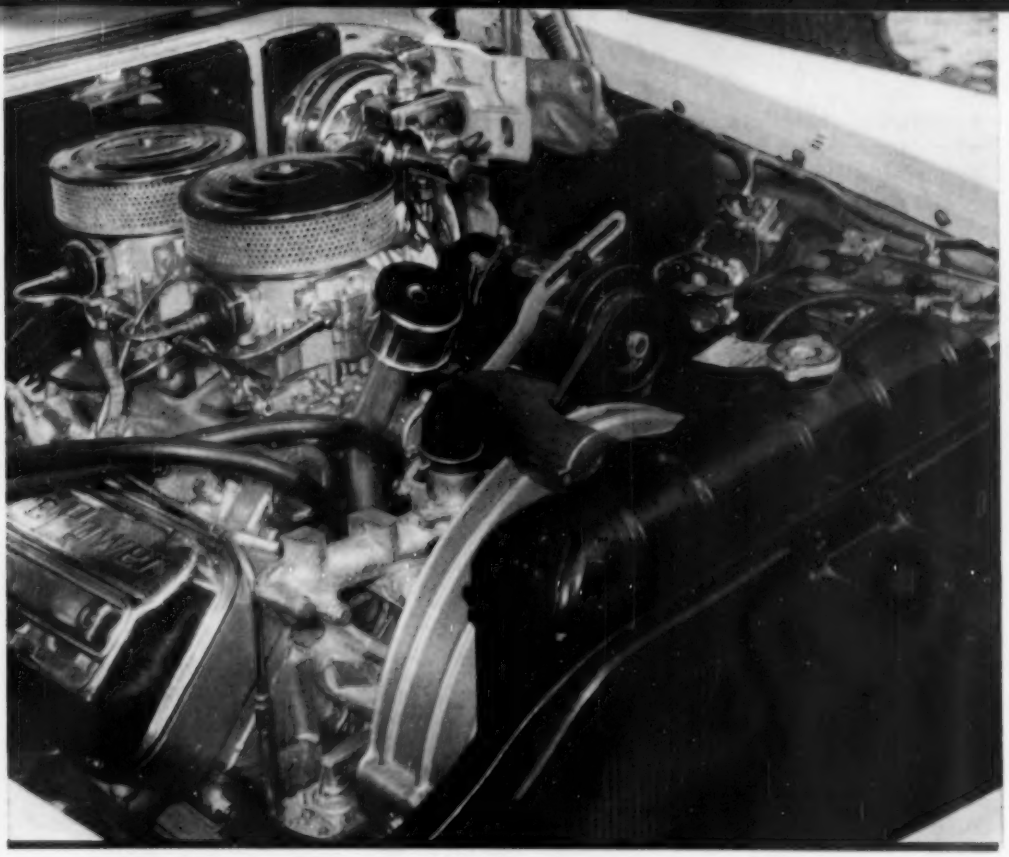
By Devon Francis

ONLY a thousand American motorists are going to get their hands on this year's most powerful Detroit automobile. It's the Chrysler 300. The figure stands for horsepower.

The manufacturing schedule calls for just 1,000 of these cars in 1955. As far as I am concerned, that's good. Let's face it—this job's a hot rod. The number of

MOST OBVIOUS CHANGE in engine is special air cleaners on twin, four-barrel carbs. Four barrels are automatically locked out during warm-up period. Cams are long-dwell type. Copper-lead, heavy-duty con rod and crankshaft bearings are used to avoid fatigue.

CAR CORNERS beautifully, rear wheels fighting against break-loose. But even with 300 hp., it won't scrub rubber at take-off. That's due to cushioning effect of torque converter. Grille is same as Imperial's.



drivers with the skill and judgment to handle that much car without bumbling into trouble is, I suspect, limited.

Chrysler's next-highest horsepower is 250. Cadillac's highest is 270, Packard's 275, Lincoln's 225.

I drove the 300. It's deceptive. You have to wait for about two seconds, after belting the accelerator, for anything to happen. The car seems well-behaved, even docile. The automatic drive takes hold smoothly. Engine noise is low.

The 300 Digs In

Then the roof falls in on you. The engine roars. You are plastered against the seat. If you have passengers aboard, their heads snap back. Fleetingly, you get the impression that you are blasting off in one of those TV spaceships.

In runs with and against the wind, from zero to 60 m.p.h., I clocked the car out at 9.9 seconds average. It did just a bit better than that because the speedometer registered only 59 m.p.h. when the car reached a true 60.

That's fast. It's impressive in an automobile weighing more than two tons *and* equipped with a torque-converter drive. Among production cars, only an Olds 98 or Super 88, weighing some 200 pounds less and driven by a mechanical-type Hydra-Matic transmission, can better that time, and then only by a small fraction of a second.

It's only fair to the Olds to add that it has almost 100 fewer horsepower.

Comparing the innate accelerative efficiency of Hydra-Matic with a torque converter is like comparing apples and oranges. They are two different things. The motorist pays for the converter's smoothness with reduced performance.

The take-off from a standing start actually is not the chief feature of the 300's performance. That occurs in the

acceleration at cruising speeds. That's where the car lays its ears back as the horsepower begins asserting itself.

This is what the 300 will do:

40 to 60 m.p.h.	4.4 seconds
40 to 70	7.6
40 to 80	12
50 to 80	10

To complete the catalogue of the acceleration performance:

0 to 20 m.p.h.	2.7 seconds
0 to 40	6.5
0 to 80	18.4

It would be avoiding the obvious not to mention that the 300 also has road speeds that reach way up on the dial. The speedometer is calibrated to 150 miles an hour.

The car won't go that fast. At the Chrysler Proving Ground, they have had the prototype up to a true 140 miles an hour. At that pace, it takes about a dozen additional horsepower for each extra mile per hour.

AUTHOR looks at "Chrysler 300" on rear fender. The grille and deck lid also carry 300's identifying symbol, a small shield in checkerboard design.

Production 300s—they started making them last month—will do upward of 130 m.p.h. To get that in perspective, 130 is only 10-odd miles an hour more than the standard Chrysler New Yorker is capable of.

Engineers Modify Standard Block

Chrysler got 300 horsepower out of its standard V-8 block, with 331 cubic inches of piston displacement, by a series of modifications.

First, the engineers removed the hydraulic valve lifters to do away with "pump up." That term means only that at the heat generated by exceptionally high engine speeds, the lifters expand and tend to hold the valves open.

Removal of the lifters was necessary because the engine has to be revved up to 5,200 r.p.m., 600 more than the 250-hp. job is called upon to produce. Engine speed is further helped by a smaller-diameter torque converter that offers the crankshaft less resistance.

Next Chrysler added a second four-barrel carburetor and installed a camshaft substantially similar to the type used by sportsman Briggs Cunningham in the same engine for the famous Le Mans race.

Other engine changes, including one in the intake manifold to accommodate the second carb, are only refinements.

Two inches lower than the New Yorker, the 300 has excellent roadability. Roll off the shoulder of the road, and it keeps its feet like a burro. The power brakes are like silk. They won't grab. At idling speed, the engine delivers a delectable mutter at the tailpipes. The hiss from the air cleaners is the beast in bonds.

Despite harder-than-normal springing, the 300 takes ordinary washboards like a baby carriage. It rounds curves without apparent roll.

In looks, the 300 is striking in its simplicity. Gewgaws are lacking. The sports-type hood is unornamented. The car's basic lines have the same grace as those of the New Yorker—the two cars use the same body shell.

There are debits. With the throttle closed, the engine idles rough. That's due to the racing-type cam. The reduction in car height is at the expense of headroom. The driver can see no more than 200 feet behind in the rear-vision mirror.

And why this boat doesn't have bucket seats is more than I can fathom. The seats are leather-covered and easy to slide on. Mash the accelerator in cornering left, and unless you hang on to the wheel with an iron grip, you'll wind up over by the glove compartment.

Finally, the 300 is hard on gas.

But if you've got $6,000 to spend for a car, who cares about gas? END

Chrysler, Chevrolet Star in Speed Runs

Chrysler 300 outran its big-car competitors for a record two-way average of 127-plus m.p.h.

DeSoto shaded Chevrolet, followed by Studebaker, among cars with middle-size engines.

THE question encountered from gas-station guys, small boys, and the young-in-spirit everywhere—"How fast will she go?"—was answered at least temporarily on the sands at Daytona Beach recently. There most makes of 1955 cars lined up to whistle through a measured-mile timing trap—with two miles in front to get cracking and two afterwards to get uncracking on the

Chevvy 8s swept a special low-price class, taking first four places plus sixth and seventh.

slithery sand. A Chrysler 300, a deceptively decorous-looking hardtop (page 128), was decisively rapid. Averaging 127.580 m.p.h., a new record, a brand-new 300 driven by airline pilot W. J. Koechling of Miami, managed to hit 130.766 m.p.h. on its downwind run.

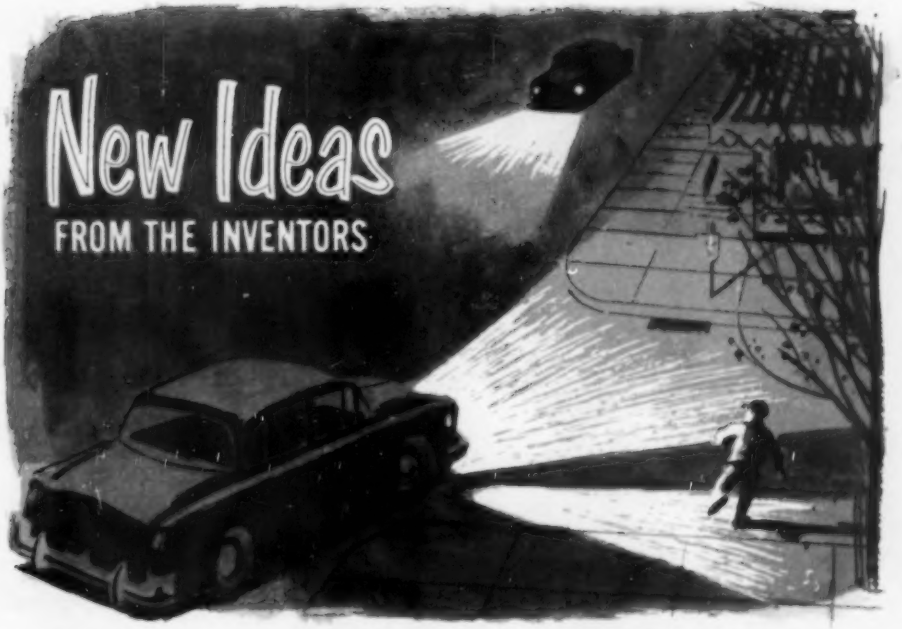
The only car to breathe closely down the neck of the fastest was another Chrysler 300, driven by Brewster Shaw, last year's winner, who was about a mile off the pace at 126.452 m.p.h. Next spot went to Lewis Hawkins in a Cadillac, at 120-plus. Following these were a Buick Century (116); another Cadillac (116); a Chrysler New Yorker (114). Oldsmobile, fast in other years, was still brisk (111) but well down the list.

Among cars with middle-sized engines (250-299 cubic inches), a DeSoto carried the honors at an average 112.295 m.p.h., closely pressed by a Chevrolet V-8 at 112.131, and a Studebaker at 111.855. Mercury was eleventh (105); Ford V-8 fourteenth (103); and Plymouth nineteenth (100).

Sports-car speeds varied greatly. The quickest was a D-type Jaguar that clocked 163, well ahead of a 4.9-liter Ferrari (154), Cunningham (149), and Mercedes-Benz 300SL (133). Less costly sports cars were led by Ford Thunderbird (124), Jaguar XK140 (119), and Austin-Healey (111). A Corvette was clocked at 103, but it was a 1954 six-cylinder model, and thus perhaps entitled to be some nine m.p.h. slower than the zippy 112 turned in by the '55 V-8 Chevvy sedan.

In acceleration runs a Cadillac topped all comers, outside the sports-car field, by covering a mile from a standing start at an average speed of 80.428 m.p.h. A Chevrolet came next with 78.158 and a Buick Century third with 77.436. A Ford Thunderbird out-scatted other American sports cars with an 84.666 average, and a big 4.9-liter Ferrari led the unlimited sports field with a rubber-burning 96.102.

How accurately the Daytona speeds represent what an owner can get is problematical. While the cars are scrutinized closely for adherence to stock rules, they *do* have the benefit of all factory options, and, in some cases, of factory engineers and mechanics. But against these benefits must be listed the handicap of wheel slippage on the sand. *—Frank Rowsome Jr.*



1 Car Lights to Turn Corners. These auxiliary side beams would light your way around dark turns. The lights would be recessed in the fender corners, and the control switches mounted on the steering column. Turning the wheel more than five degrees would switch on the proper light. In addition to banishing blind spots, the beams would warn pedestrians that the car was about to turn.

2 Alarm to Guard Window. A thief who mistook this partly open window for an unguarded one would be in for a noisy surprise. Lifting the sash would set off an alarm. Once triggered, the bell would ring until its spring ran down or it was silenced by a special key. The mechanism could also be used as a door signal.

3 Mattress to Keep You Warm. You wouldn't be snarled by electric-blanket wires if you slept on instead of under the bed warmer. A heating unit molded into a foam-rubber mattress would take the chill off your slumbers. And body movements, says this inventor, would help circulate the warmth rising through the porous foam.

Please turn the page for more new ideas

MORE New Ideas from the Inventors

4 Cart to Spare Gardener's Back. A push-while-you-sit gardening cart might take some of the stoop out of weeding and lawn trimming. The gardener would straddle this low, narrow, broad-wheeled cart and push it along with his feet. The lower part of the wagon would hold a basket for cuttings and a space for tools.

5 Pipe to Sit on Built-in Rest. A pipe that had this self-contained stand carved or cemented on the corner of the bowl could be "racked" on any table. The angled corner piece would hold the pipe upright. If the pipe were laid flat, the squared bottom of the stand would keep it from tipping and spilling its ashes.

6 Saddle to Seat Extra Riders. Fold-away bucket or saddle seats might solve the recurrent problem of what to do with those extra passengers who usually end up on someone's lap. This adjustable, collapsible seat would be bolted to the back of the front-seat frame where the headroom is generally greatest. When not in use, it would fold up snugly, but when extra passengers came aboard, the saddle portion could be let down. In open position it would clear the knees of those on the back seat, and the saddle itself could be adjusted vertically to permit either youngsters or longer-legged adults to ride with their feet touching the floor.

U. S. patents on these inventions have been granted to: 1. E. C. Pederson, Los Angeles; 2. R. Belanoff, Brooklyn, N.Y.; 3. A. L. Freedlander, Dayton, Ohio; 4. J. Dracos and J. W. Williams, Monterey, Calif.; 5. R. L. Sessoms, Asheville, N. C.; 6. A. B. Bell, Philadelphia; 7. F. Chalmers, Grosse Pointe, Mich.; 8. R. and D. Fischer, Kirkwood, Mo.; 9. W. Van Hook, Maxwell, Iowa.

7 Mower to Double as Barrow. A platform like this could make your lawn mower serve as a hand truck, too. The attachment, made of wood or light metal, could be adapted to fit a variety of mowers. Its front would rest on the raised roller; a notch at the back would lock around the mower handle.

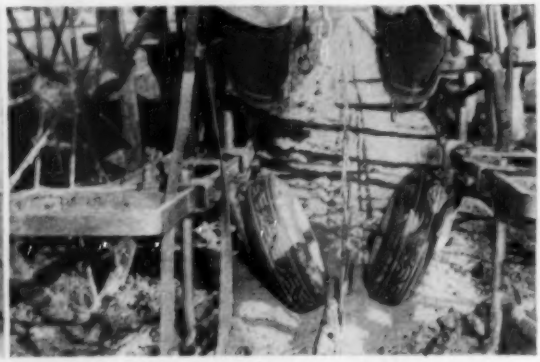
8 Ash Tray to Hook Under Chair. You wouldn't have to juggle an ash tray on your lap or aim your cigarette flakes at the nearest table if there were a receptacle like this hooked under your chair. A decoratively faced pull-out drawer would fit into a box-like container, and this would be attached to a spring or to an adjustable elastic strap. Hooked pins at both ends, and the tension of the band, would secure the ash-tray attachment to the chair bottom.

9 Glove to Adjust Welder's Mask. A welder usually has to flick his dark-glass eye shield down each time he strikes an arc, then raise it by hand. This outfit would raise and lower his shield automatically. Induced current from the gun handle would pass through wires embedded in the glove. A spring would normally hold the shield in raised position, but when current started to flow to the electrodes, a solenoid would pull it into place.

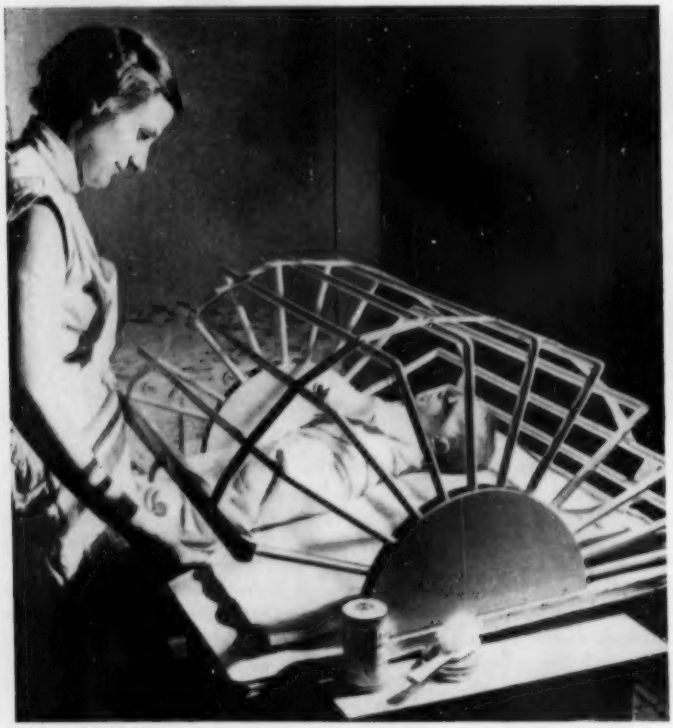
Nursery Machines Speed Rose Raising

RAISING rose bushes has been mechanized at the Howard Nursery in Hemet, Calif., with ingenious machines built by the nurserymen themselves. In the one below, drawn by a tractor, twin disks with crossbars both mark rows and break up soil for planting cuttings. Bigger rimmed disks ahead of them keep the cutters from going too deep. There's also a digger (not shown) for loosening bushes so they can be lifted by hand.

OUTRIGGER makes guide line for tractor's return trip as row marker breaks up soil.



TAMPING WHEELS, drawn by horses, pack the soil around the newly planted cuttings.



Wooden Sitter Holds Active Baby Safely

THIS barred contraption is a German inventor's answer to a crying need of the carriage trade. Called a "Baby Safe," it's designed to keep Junior from rolling off the table when Mom turns her back to take a telephone call or leaves the room to answer the doorbell. To release baby, you press a button and the wooden frame folds back over the base like the hood on a perambulator.

◀◀◀Plumbers now use atomic techniques—they find pipe leaks with radioactive isotopes and Geiger counters.

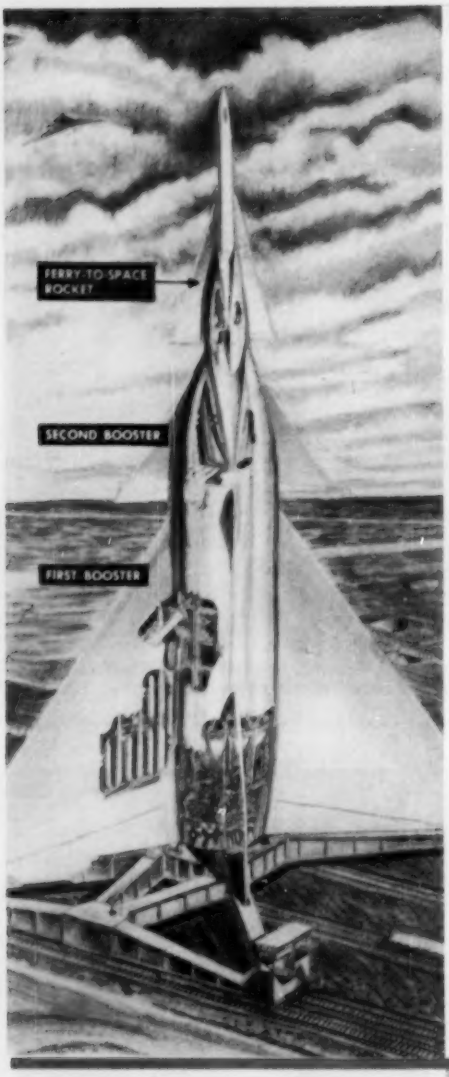
THRESHER HARVESTS SEED. Machine reaps two rows on each trip. Paddles force bushes against mowing bar that cuts off tops. Chaff is blown out through the stack at the rear.

Movie Tells the Inside Story

THIS X ray and conventional image were taken on a single negative. Devised at the University of Rochester, the technique is used in speech studies. It lets doctors view motion pictures of the face and X rays of the vocal organs simultaneously.

Vacuum Powers Gentle Lift

A LOT of nothing grips this big TV tube to hoist it from one spot to another. When the vacuum cup is lowered, the same air that runs the hoist creates the vacuum that locks the Ingersoll-Rand Vac-Lift to the smooth surface of the tube.



Tune Yourself In on

THE booster rocket that got me off on a three-day space flight was an express elevator to the 24th floor of the Hotel McAlpin in New York City. Several hundred scientists and engineers were up there holding the ninth annual convention of the American Rocket Society.

Space-flight talk filled the air.

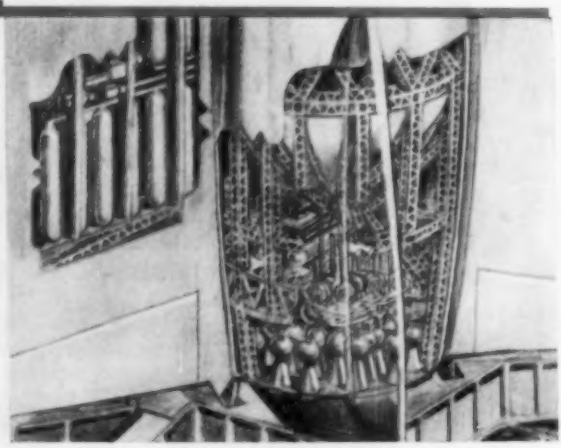
"I could blast you to smithereens the day you started building a station up in space," came a strident voice from a group in one corner.

"I'd do it like this," Strident Voice continued. "I'd let you send up hundreds of costly supply rockets with construction materials and equipment. I'd wait while you paid big overtime to hundreds of workmen floating around in space to put it together. I'd watch until you had spent your four billion dollars, or whatever—then I'd send up my homing rockets and blow your station to bits."

Strident Voice paused for breath, then added, "Anyway, that's what any enemy

Rocket planes riding tandem would keep space stations supplied

THREE-STAGE ROCKET pictured above would ferry men and supplies to a satellite station circling the earth 500 miles up in space. Each stage would carry a crew; delta wings would make it possible for all three to come back to earth in glider flight. On returning to earth, the two booster rockets would be fitted with jet engines for conventional airplane flight back to the take-off base. The top, or final, stage, would carry passengers and supplies to the space station. Picture at right shows details of construction, including rocket engines and rocket-fuel tanks in the wing. A design study for the space ferry was presented at American Rocket Society meeting by three engineers of the Goodyear Aircraft Corp.



Space-station enthusiasts are debating whether to build their own satellite or use one that's already circling Earth.

the Rocketmen

By Herbert O. Johansen

nation would do if we tried to build a big platform out in space."

"Suppose the space station were able to steer an evasive course when you sent up your space-station-blasting rockets?" a skeptic asked.

Lying in Wait—a Deadly Cloud

"Wouldn't make any difference," spoke up Strident Voice. "A direct hit isn't necessary. I could use the method proposed by Professor Thomas of Columbia for the destruction of satellite vehicles: fill the warhead of the rocket with several billion tiny pellets, or shot, and shoot it up into the orbit in the opposite direction of the artificial satellite. The warhead would explode and disperse the shot into a vast cloud through which the space platform would have to pass twice during each earth-orbiting. Before long the space station would be perforated into a lace station."

"But don't we all agree," a peacemaker asked, "that it would be a good idea to have a manned space station?"

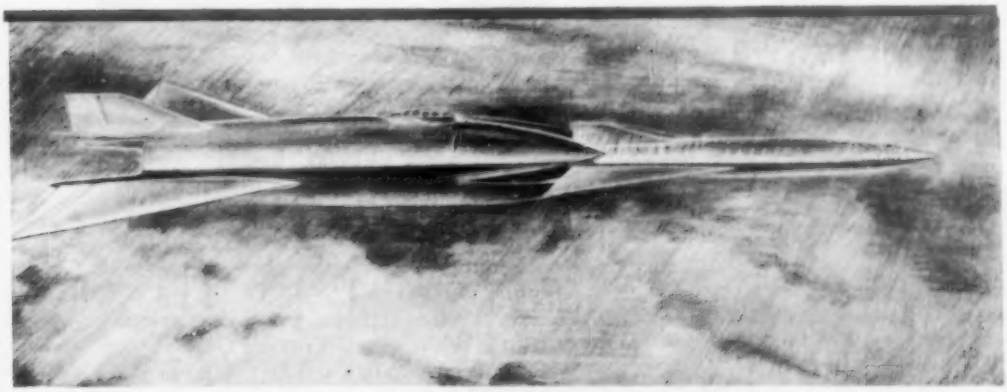
Everyone did. "Why, though," a gravelly voice asked, "do we have to build it? Couldn't we use a natural extraterrestrial object, such as an asteroid, that's already circling the earth as a satellite? Then we would only have to send up supply ships with men and scientific equipment. A satellite of that size and mass—bigger than anything we could build—would be a Rock of Gibraltar in space. It just couldn't be destroyed."

"Yes, but we would have to find such a natural space body first," he was reminded.

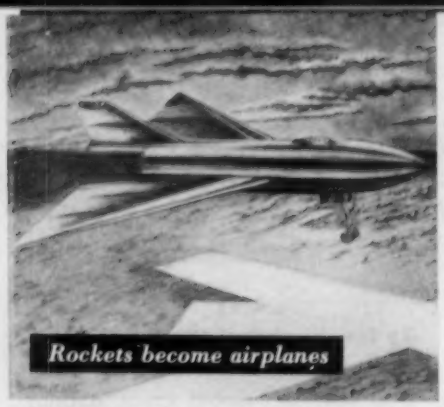
He Looks for Tiny Worlds to Conquer

"I think our friend Dr. Tombaugh over there could take care of that for us. If his new telescope-camera can see a tennis ball 1,000 miles up in space, surely he would be able to find an asteroid that's big enough for us to colonize —if there is one up there, of course."

Gravelly Voice was referring to Dr.



WINGED ROCKET is shown at point where it would separate from the second booster at an altitude of 40 miles. It would then speed on out into space at more than 15,000 m.p.h.



SECOND BOOSTER ROCKET, its landing gear lowered, makes a normal glide approach at an airport. The pilot would have some rocket fuel left for power flying in an emergency.

FITTED WITH JET-ENGINE PODS and added tail surfaces, the second booster takes off in conventional airplane flight for the return trip to its original take-off base.

FIRST BOOSTER is the giant of the space ferry. Here, fitted on first landing with four twin jet-engine pods on each side of its delta wing, it prepares to land at home base.

Clyde W. Tombaugh, the distinguished astronomer who discovered the ninth planet, Pluto, in 1930. He is now in charge of a satellite search for Army Ordnance at White Sands Proving Ground in New Mexico.

Whether his camera has picked up anything of significance, Dr. Tombaugh will not say. But he believes that "the chances that there are such natural earth satellites are just as good as the chances that there aren't any."

I moved on to another group, attracted by the startling remark: "We must have a regular, dependable and safe passenger-cargo rocket-ferry service into space—perhaps daily—if we expect to have a permanently manned station."

"How about the Romick-Knight-Van Pelt system?" another speaker suggested. "Their winged glider-boosters sound very practical."

I soon heard more about this Romick-Knight-Van Pelt system from Darrell C. Romick of the Aerophysics Department of the Goodyear Aircraft Corp. His contribution to the meeting was a paper, prepared in conjunction with Richard E. Knight and John M. Van Pelt, also Goodyear engineers, outlining a plan for a space-station ferry service. Theirs is the plan pictured on these pages.

A 500-Mile Hitchhike—Straight Up

The vehicle they propose would stand 285 feet high and be made up of three rockets. Each stage would have airplane delta wings, extendible landing gear, and carry a crew. The second (center) booster rocket would nestle between open doors in the nose of the bottom rocket. The top rocket would snuggle into the open doorway of the second stage. Total weight would be 9,000 tons, of which 7,807 tons would be rocket fuel. The top rocket would carry 35 tons of passengers and cargo 500 miles above the earth for its rendezvous with the orbiting space-station satellite.

For a take-off base, they suggest the Army's White Sands Proving Ground in New Mexico. When the first stage fired, it would boost the monster rocket pyra-

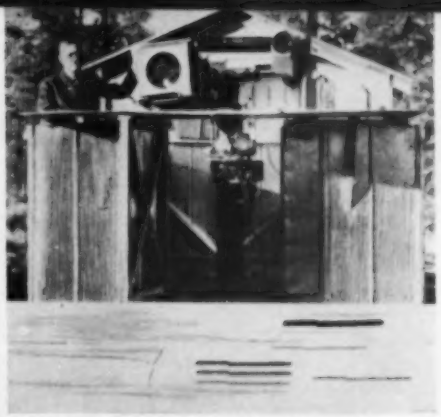
mid straight up, slowly at first, then heading eastward as it gained speed. At a height of 25 miles, the first booster would cut its fuel, drop off and close its nose doors. It would then glide back to earth, landing as an airplane just north of Big Spring, Tex., about 300 miles east of White Sands.

Meanwhile, the second booster, at an altitude of 40 miles, speeding at 15,000 miles an hour, would similarly drop off and glide back to earth, landing just north of Prentiss, Miss., some 1,000 miles east of White Sands.

The final stage, burning its own fuel in a brief burst of speed, would then rocket in free flight to the 500-mile altitude of the orbiting satellite. After transferring its passengers and cargo to the space station, it would glide back down and land at White Sands.

The two booster rockets, as they landed, would be fitted with jet-engine pods and flown to White Sands as conventional airplanes. And there the three stages would be put together again for another ferry flight into space.

A new approach to sending up a small unmanned "moon" was made by Kurt R. Stehling of the Bell Aircraft Co., and Raymond M. Missert of the University of Iowa. They suggest shooting a small, three-stage rocket combination from a huge plastic skyhook balloon that would launch it at 75,000 feet.



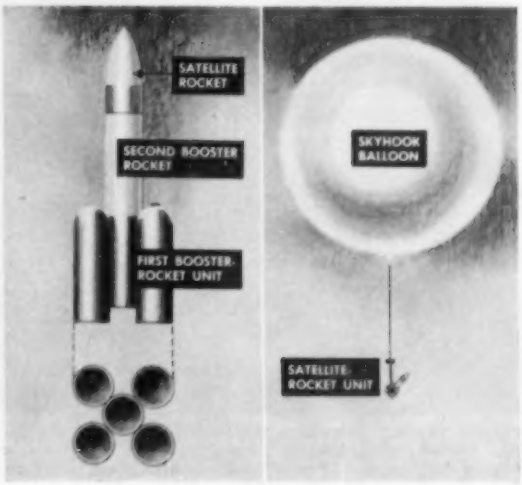
A TENNIS BALL 1,000 miles above the earth could be photographed by this telescope-camera developed by Dr. Clyde W. Tombaugh (shown in photo), discoverer of the ninth planet, Pluto. Just above are unidentified "sky tracks" shot by the camera.

An unmanned earth satellite, however, would be too much of a temptation for the rocketmen to leave alone. That was the opinion of Lt. Comdr. George W. Hoover of the Office of Naval Research.

"If we get an unmanned satellite," he pointed out, "someone will soon decide to cut a hole in it, call it a cockpit, and stick a man in it." END

Skyhook balloon would launch small space station for scientific research

AIR DRAG at low altitudes would make it costly in fuel and weight to rocket-launch even a small, unmanned space station that would circle several hundred miles above the earth as an artificial moon. To overcome this drag, scientists propose sending up a small three-stage rocket at the end of a big plastic balloon, from which it would be launched at an altitude of 75,000 feet. This skyhook balloon method has been used successfully for launching high-altitude research rockets to explore the ionosphere, as shown in the photograph inset here. (See PSM, Dec. '54, p. 114.)



NEW TWIST gets flexible Truckstell truck over "impassable" terrain. Car and body coupled by tube of alloy steel can tilt opposite ways to follow uneven ground, as pictured above.

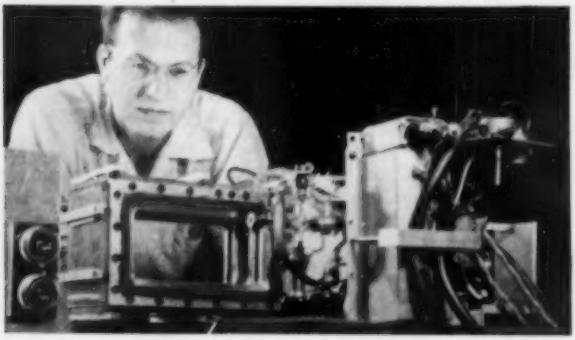
Designers Make Trucks Do Tricks

EMERGENCY STOP saves lives if brakes of the truck trailer (left) fail on hill. Release cable drops heavy steel chocks curved to engage rear wheels, and runaway is dragged to a halt.

"ROAD TRAIN," threading perilous route, carries 80-ton turbogenerator rotor (in crate) on 67-foot-long tractor to new hydroelectric plant in Australia's Snowy Mountains. Radio links steersman of trailer (foreground) with drivers of two 250-hp.-tractor "locomotives."

Pipeline's Wings (Not for Flying) Keep It Steady in Wind

WINGS on the pipeline above help to keep it stable as it bridges the Colorado River. Engineers added the triangular metal pieces to break up the pipe's round contour, which had made it buck in the wind. The Texas-California pipeline carries natural gas.



Bubbles Mark Trail of Atomic Bullets

A NEW atom catcher marks the path of atomic bullets with tiny bubbles. Its tank holds a hot liquid pressurized to prevent boiling. When pressure is released, bubbles form along the bullet path just before the liquid boils. Prof. D. A. Glaser, University of Michigan, developed it.

How the H-Bombs Spread Radioactivity

An official report reveals the facts about perils of fall-out from thermonuclear weapons.

ONE large H-bomb blankets an area nearly as large as New Jersey with lethal radioactive dust. Far outranging other casualty-causing effects, the lingering radioactivity of this fall-out poses a staggering defense problem.

Long cloaked in secrecy, the facts about fall-out now are revealed in an authoritative U. S. Atomic Energy Commission report. It takes the U. S. H-bomb of March 1, 1954, as an example. Radioactivity heavily contaminated an elliptical or cigar-shaped area, downwind from this blast, of 7,000 square miles. Had the zone been a populated one, instead of open sea, everyone failing to flee or take cover would have risked death.

From H-bomb-threatened cities, this shows, either people must be evacuated to much greater distances than civil-defense planners had figured on—or else they must take shelter, in cellars or hastily dug foxholes, while the worst of the radioactivity "cools off."

PATTERN OF "DISTANT" FALL-OUT over U.S. from A-bomb tests at Nevada Proving Grounds is shown by shading on map, based on official measurements at monitoring stations. A-bombs' minute radioactive particles, widely scattered by winds and losing radioactivity while airborne for weeks or months, are called no hazard outside immediate vicinity of blast.

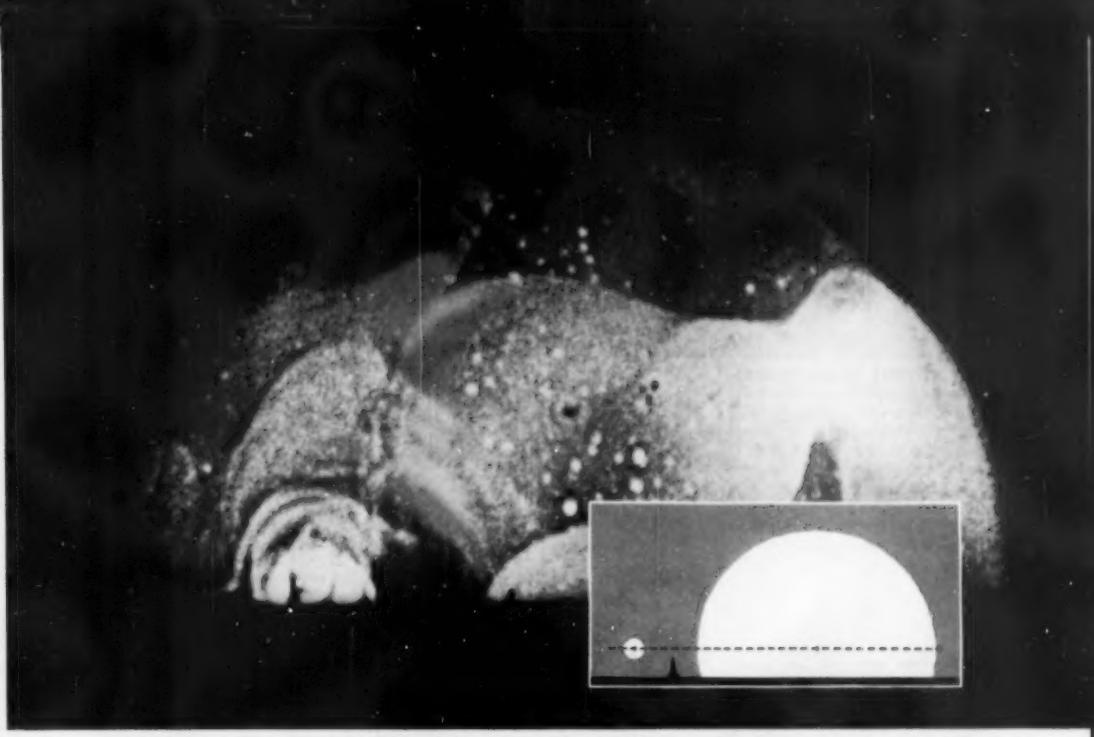
The report reveals two fission products, radiostrontium and radioiodine, to be the most dangerous radioactive contaminants. These are among the "ashes" of an A-bomb, and so of an H-bomb, since it uses an A-bomb as a detonator. Why are they more dangerous from H-bombs than from A-bombs?

Giant Fireball Sucks Up Particles

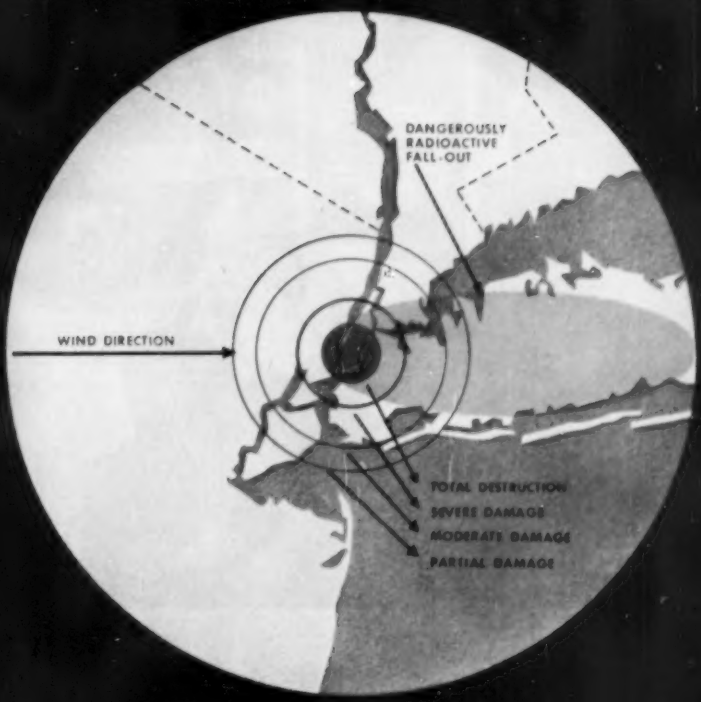
The H-bomb's relatively enormous fireball makes the difference. Even from 2,000 feet, the altitude of a burst for maximum blast effect, the fireball envelops the ground. So a huge amount of debris like earth or coral is sucked into the bomb cloud. Coarse particles of it, coated with condensing fission products, settle rapidly and heavily to earth in a downwind zone.

From the same height, a moderate-sized A-bomb's fireball does not reach to earth. Fission products condense largely on dust that happens to be in the air, and form tinier particles that may be airborne for weeks or months before settling to earth. By then they are widely scattered and most of their radioactivity has died away.

Nowhere in the world outside testing areas, the AEC adds, is radioactivity currently being deposited in dangerous amounts. From all A-bomb and H-bomb tests in all countries, an average American's exposure to abnormal radioactivity has totaled about 1/10 of a roentgen or about as much as from one chest X ray. —*Alden P. Armagnac.*



H-BOMB'S FIREBALL, pictured here, measures more than three miles in diameter. Fireball of Nagasaki-type A-bomb, in contrast, has diameter of 900 feet. If both bombs were exploded at 2,000-foot altitude for maximum blast effect (inset above), A-bomb would produce no serious radioactive contamination. But H-bomb, with fireball touching ground, draws debris into cloud, and heavy "local" fall-out follows. It blankets cigar-shaped area outranging circular zones of blast damage, shown below for a 10-megaton H-bomb. Fall-out zone varies with winds, and size of ellipse arbitrarily assumed here may be conservative.



The dah-dit men, a pestilence on the air waves 45 years ago, now fill the ether with signals to spark the nation's defense.

CIVIL DEFENSE banks on radio hams with mobile transmitters and receivers to maintain vital communications in case of enemy attack. The hams above, photographed in the "field" during a CD test last June, are representative of the 120,000 amateurs available in any national emergency.

Radio Hams

"BUTT out, bud, butt out!" the Navy's wireless transmitter at Charlestown, Mass., crackled angrily.

A Boston amateur was blotting out an urgent message to the Portsmouth, N.H., naval base with a great, fat blob of a signal on the same wave length.

"You Navy people think you own the ether?" the ham snapped back in his dots and dashes. "Beat it."

That was almost a half-century ago. Now the military services and civil-defense leaders are heaping praise on the same amateurs who once messed up the air "like mischievous boys splashing around in a pond."

SOMETHING SPECIAL in "rigs" (below), at East Braintree, Mass., cost its owners more than $25,000. They are G. Burton Davy (left), a shoe-leather manufacturer, and Fred S. Lakewitz, an electronics engineer. Their call letters are W1UAR and W1RXR respectively.

THEIR TARGET WAS THE MOON, and they astounded radio engineers by bouncing 650-watt signals off it in 1953. First, though, Ross Bateman (left) and Bill Smith, hams from Falls Church, Va., had to do some precise surveying in order to aim their beam antenna at a calculated position of the satellite.

Serve Nation Now

The Edison Radio Amateur Award for 1954 went to a ham named Benjamin S. Hamilton, 35, who designed equipment, wrote specifications, and trained personnel to give his 750,000 neighbors in San Diego County, Calif., one of the country's finest emergency communications systems. Civil Defense Administrator Val Peterson watched, during the presentation ceremonies in Washington this spring, while Mr. Hamilton tapped out a message to the nation's 120,000 hams praising them for their helpfulness to their government.

When the American Radio Relay League was organized in 1909, hams shared air channels with military and commercial wireless operators. Their spark-gap transmitters were a frightful nuisance. But even in those days the hams were teaching the pros new tricks. In 1911, for example, two young New York hams, Frank King and George Eltz Jr., broadcast music—for the first time in history, probably—and startled the wireless operators wearing earphones on nearby naval vessels.

Government Clamps Down

Such frivolity led to action limiting the hams to 1,000 watts of transmitting power and forbidding them to stray above the 200-meter mark in wave length. This was supposed to curb them. But the hams soon turned those supposedly barren wave lengths into a remarkably fertile field.

They led the way to such future developments as police radio systems, over-water telephone transmission, short-wave rebroadcast pickups and the single-signal receiver, now used in almost all communications systems.

As aerial counterspies, they have been especially valuable. Even before the U.S. entered the First World War, an alert ham caught the Germans sending unneutral messages from a big wireless station at Sayville, L.I. During World War II, when 25,000 hams

SETTING A WORLD'S RECORD for amateur microwave transmission, the Oregon hams above recently communicated over a distance of 47.4 miles in the vicinity of Portland on a frequency of 10,000 megacycles. Their equipment consisted of converted military surplus, a homemade 118-power reflecting telescope (top) to line up stations, and hand-built parabola (bottom).

OUTSTANDING AMATEUR OF 1954, Benjamin S. Hamilton, won a GE public-service award for organizing hams of San Diego County, Calif., into an outstanding civil-defense radio system.

IN A CLASS BY THEMSELVES are the 2,000 U.S. amateurs who own radio-teletype equipment. One of the pioneers was John E. Williams of the VHF Teletype Society in Woodside, N.Y.

were in military service, other amateurs manned the FCC's Radio Intelligence Division. They located lost planes, helped catch enemy agents in South America and tracked down and helped silence several hundred illegal or subversive radio transmitters.

Right now a great many hams are practicing a cops-and-robbers technique with mobile transmitters (PSM, June '52, p. 73) that would enable them quickly to locate Fifth Columnists or parachuted enemy radio operators in case of another war. These mobile transmitters, independent of commercial electrical lines, would be of the utmost importance, too, in maintaining communications in the event of atomic attack.

Doorbell Batteries Powered His SOS

When the great Vermont flood of 1927 had destroyed the utilities of one town and threatened to wipe it out altogether, a radio amateur there summoned aid by using the power of doorbell batteries.

When earthquakes nearly shook the life out of Long Beach, Calif., and surrounding towns in 1933, silencing all telephones, telegraphs and commercial radio stations for hours, a schoolboy who had just received his ham license sent out the first call for help.

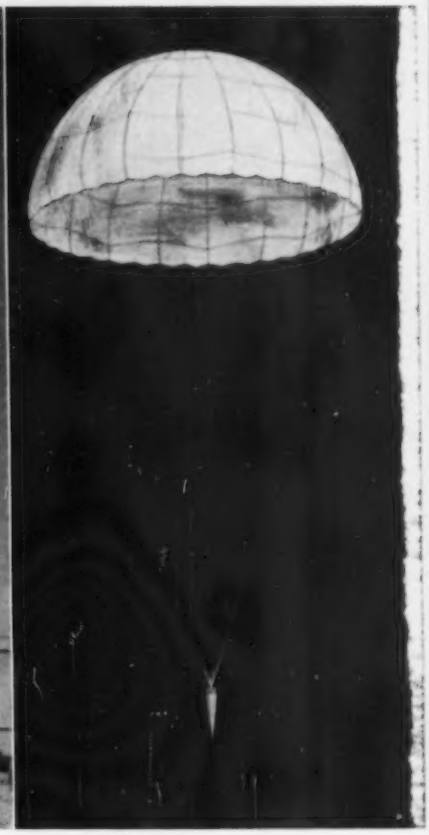
U.S. hams range in age from nine to 90; the average ham is 34. Usually he has built his own transmitter but bought a commercial receiver. Though a rig can be put together for as little as $50 or as much as $100,000, a typical outfit costs about $900.

Both the amateur and his station must be licensed. He can get a novice license if he can send and receive international Morse code at the rate of five words a minute and pass a simple examination on the fundamentals of radio. To be a full-fledged ham, he must be able to send and receive 13 words a minute and pass a stiffer examination. He must satisfy the code requirements even if he intends to transmit by voice.

Because of the work hams are now prepared to do if the nation is attacked, civil-defense authorities are urging that the Government lend them a hand in the future, rather than concentrate on curbing them. END

BENEFACTOR to his fellow hams and to TV watchers everywhere is Don E. Norgaard of General Electric's Knolls Laboratory. He invented the "harmoniker," which he is holding here. It greatly reduces possible TVI (television interference) from radio transmitters.

Rocket Hoists Radar Target For Missiles

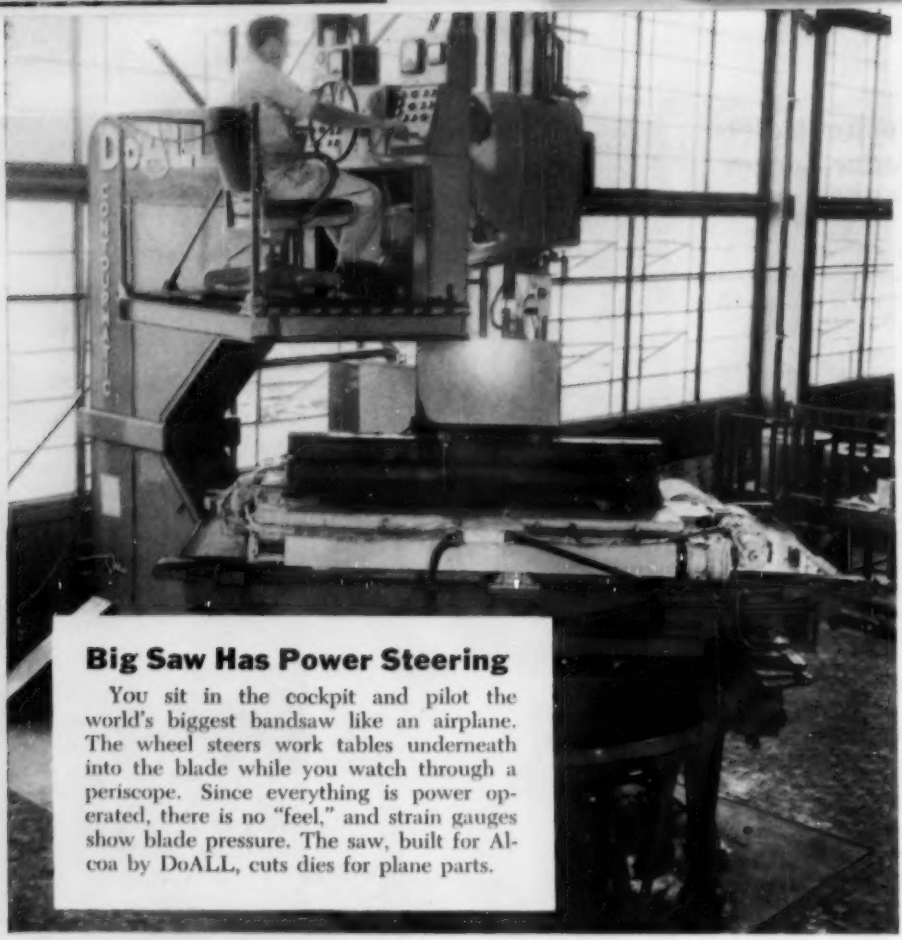


THAT rocket heading straight up at right is the newest practice target for guided missiles. At a preset altitude, the 17-pound nose is blown off by a powerful spring and drags out a silver-coated parachute from the rocket. The nose stabilizes the chute as it floats down (far right). The metalized silk chute reflects radar waves, so the target is easily "seen" by the missile's guiding mechanisms.

The 212-pound rocket, 163 inches long and seven inches across, is powered by a solid rocket fuel. Developed at the New Mexico College of Agriculture and Mechanical Arts and now under test by the Navy, the rocket costs less than the radio-controlled planes presently used as targets.

His House Is a Hangar with Living Quarters Upstairs

WALK through the front door of Charles Vellines' home in Beaufort, N.C., and you walk smack into the tail of an airplane. Almost all the first floor is a hangar for a 125 Swift, which rolls out through sliding doors in the rear. Entrance to the upstairs living quarters is through the breezeway. Vellines, a repair official at the Cherry Point Marine Corps Air Station, did a lot of construction work on the house himself.



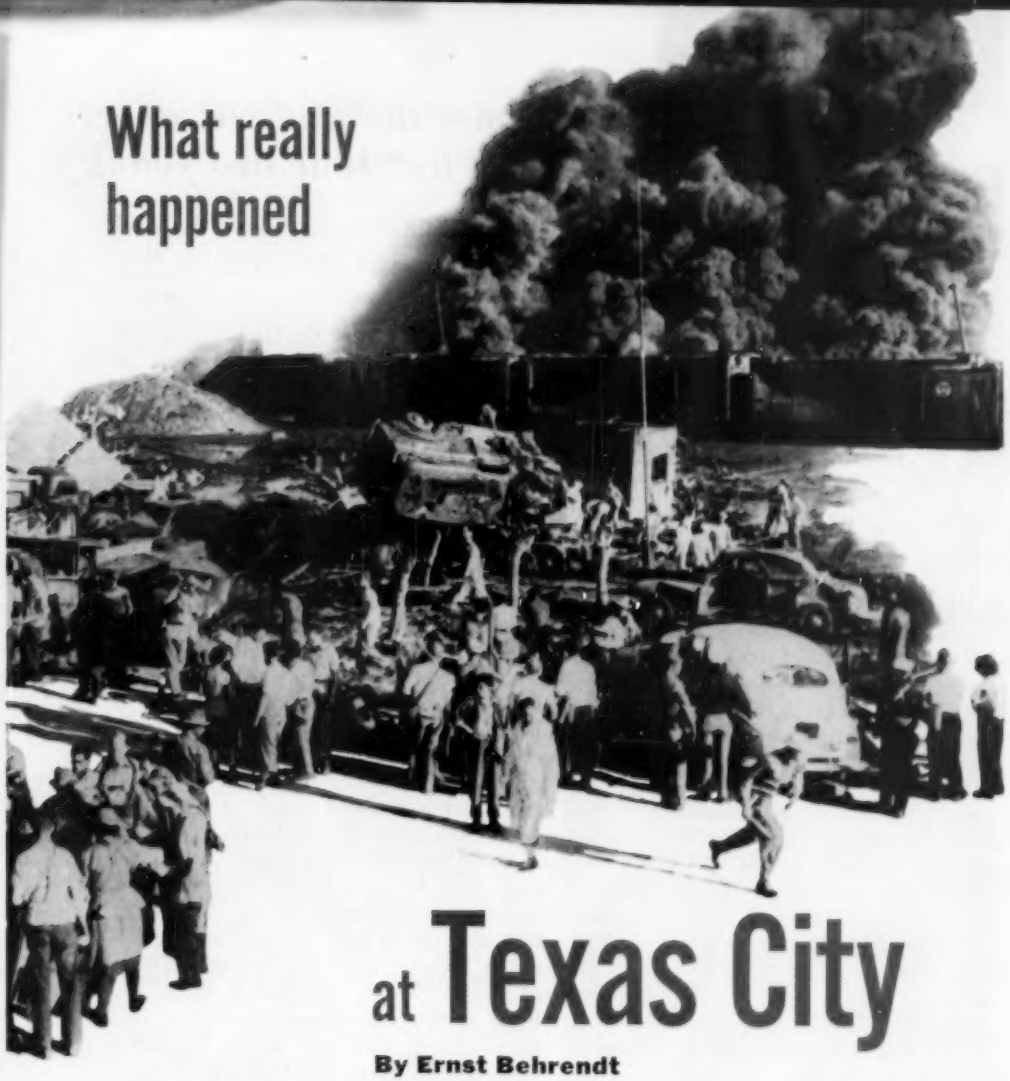
Big Saw Has Power Steering

You sit in the cockpit and pilot the world's biggest bandsaw like an airplane. The wheel steers work tables underneath into the blade while you watch through a periscope. Since everything is power operated, there is no "feel," and strain gauges show blade pressure. The saw, built for Alcoa by DoALL, cuts dies for plane parts.

"Dinghy" Scooter Mounted on Car May Beat City Traffic Jams

A SCOOTER carrier is Sweden's answer to city traffic. The wheeled dinghy hangs on two arms that swing out (left) from under the car to support rear wheel and front fork. You park the car on the outskirts of town and chug in on two wheels.

What really happened at Texas City



By Ernst Behrendt

A team of persistent scientific detectives, at work in a laboratory 1,500 miles away, has tracked down the mysterious cause of America's most disastrous explosion. What they found should insure that there will never be another catastrophe like the one that struck Texas City, Tex., on April 16, 1947.

About eight o'clock that morning just eight years ago a longshoreman aboard the French freighter *Grandcamp* in the port of Texas City saw a wisp of smoke curling up from a hatchway. He grabbed a jug of water and poured it down into the hold. The longshoreman was unwittingly trying to prevent the explosion of 2,300 tons of ammonium nitrate fertilizer.

A little later, crew members of the *Grandcamp* squirted a few

Troops blocked off the blast area.

Sometimes the stuff, set afire, Why? How two young

more jugfuls of water, and even the contents of a small fire extinguisher, down into the hold. But by now fumes were escaping from the bags of fertilizer in fairly dense orange-brown clouds and it was obvious that the fire was making headway.

Someone dragged a fire hose to the hatch and pointed its nozzle downward. But no water was turned on. As far as can be established at this date, one of the officers is said to have been against using water because water might damage the cargo.

If the officer actually said that, he made a colossal mistake, because at this point probably nothing but large amounts of water might still have prevented the destruction of the *Grandcamp*, of the Monsanto plant across the quay from the burning freighter, and of Texas City itself.

About 8:30 the fire seemed out of control and everybody was ordered to leave the holds. The hatches were battened down and live steam was pumped into the ship. Thick fumes kept coming through cracks in the deck. Someone called the Texas City fire department. Someone else called Galveston and requested two tugs to tow the *Grandcamp* out into Galveston Bay, for it now seemed decidedly unsafe to leave the burning ship in the harbor. The fire might endanger other ships—the *High Flyer*, with 860 tons of ammonium nitrate fertilizer and 960 tons of sulfur on board, was anchored 600 feet from the *Grandcamp* in the next slip—and possibly the harbor itself. All hands were ordered off the *Grandcamp*. At the Monsanto plant they were readying their fire apparatus.

By nine o'clock the *Grandcamp* was spouting enormous quantities of black smoke, dense red-orange fumes, and flame. The deck had grown so hot that water running down the planks evaporated immediately. A few seconds later the hatch covers blew off. A puff of smoke billowed up. At 9:12 the *Grandcamp* exploded. A geyser of water, oil and metal shot hundreds of feet upward. Steel fragments smashed into two planes that had been circling the harbor area and brought them down into the water. The waterfront disappeared under a wave of water topped by patches of burning oil. The wave hurled a large steel barge 50 feet inland and then dropped a fire truck on top of it; the oil immediately started scores of fires.

Seconds after the explosion, the walls of the Monsanto plant caved in and the roof came down on hundreds of workers. Most of them were killed. The blast flattened plants and warehouses "so that not a splinter remained upright"; balls of hemp twine, catapulted from the holds of the *Grandcamp* where they had been stored, streaked across the town and turned distant roof tops into torches.

A two-mile stretch of waterfront was hopelessly ablaze. Metal splinters shot from the *Grandcamp* tore holes through storage tanks and pipelines. Gasoline, benzol, propane and ethyl benzene ignited. Explosions kept shaking the town for hours. Tin smelters collapsed and refineries disintegrated in a holocaust whose heat melted steel girders. The fire could be seen 25 miles away.

Sometime during the day fire broke out on the *High Flyer*, and hours later attempts to put it out had to be given

just burned. Sometimes—as here—it blew. scientists found the answer is a fascinating tale.

up; nor was it possible to move the burning freighter out to sea. Police cars and sound trucks cruised through debris-littered streets, their loudspeakers blaring incessant warnings: "Evacuate Texas City. The *High Flyer* will explode."

The *High Flyer* did explode at 1:10 the following morning, destroying what the *Grandcamp* had spared. In the two explosions, 560 people were killed, more than 3,000 were injured, dozens of plants and several thousand homes were partially or totally destroyed. The damage was estimated at more than 100 million dollars.

Fires were still burning and streets were still not cleared of debris when official investigations got under way. From the very first moment, everybody was struck by an inexplicable paradox: The effect of what had happened on the *Grandcamp* and the *High Flyer* was amazingly out of proportion to its cause. Fertilizer had caught fire, but the explosions could hardly have been more violent if the cargo had been TNT. By some process not yet understood, the seemingly harmless fertilizer had acquired the properties of a high explosive.

The first group to tackle the problem was the Inter-Agency Committee on Hazards of Ammonium Nitrate, appointed by the Secretary of the Treasury. In this committee a number of Government agencies and organizations were represented. But what the committee knew about ammonium nitrate was not enough to permit clear-cut explanations and recommendations. More research was needed.

On the face of it, this seemed simple enough. Ammonium nitrate is a common substance, and enough material on ammonium nitrate fires and explosions could probably be found in scientific papers; all that had to be done was to collect and organize the data and announce: "Under such and such conditions the fertilizer will blow up."

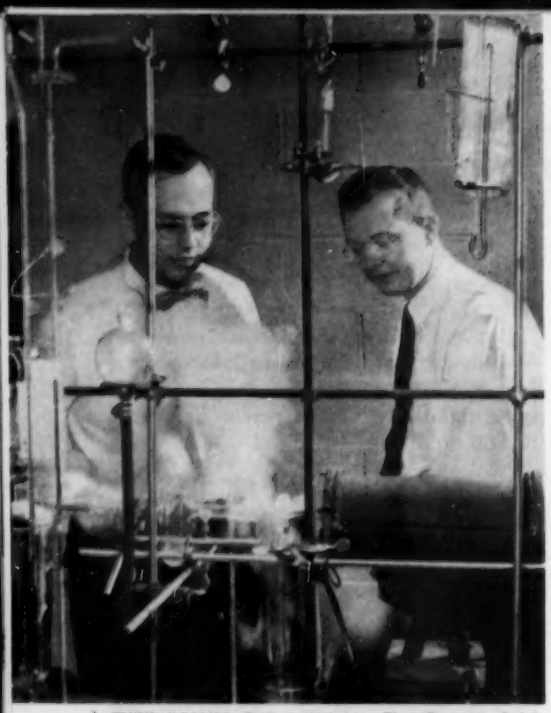
But matters were not that simple.

Research was undertaken by several organizations. In one elaborate set of experiments a group of researchers tried to find an answer by doing what seemed logical but really wasn't: They duplicated the conditions that had prevailed on the freighters. Naturally they could not handle ammonium nitrate in thousand-ton loads. Instead they decided to

Exploding ships set docks ablaze (center).

use a scale model. Everything was just the way it had been on the *Grandcamp*, except for size and quantity: six tons instead of many hundreds of tons. Then the ammonium nitrate was set on fire.

It was a glorious fizzle. The fertilizer burned fiercely enough, but the fire never made it explode. This seemed to prove that fire would not make the fertilizer explode. But as it had exploded



THEY SOLVED THE MYSTERY: Dr. Raymond M. Hainer, left, and George Feick in their laboratory at Arthur D. Little, Inc., Cambridge, Mass., where they cracked the Texas City case.

dramatically in Texas City, something was obviously wrong with the experiments. Another organization proceeding along somewhat similar lines also came up with unsatisfactory results.

It was not until 1950 that the U. S. Coast Guard obtained sufficient funds from Congress to initiate a large-scale research project. One of the groups to which the Coast Guard awarded contracts was the research and consulting firm of Arthur D. Little, Inc., in Cambridge, Mass. And to this organization belonged the two scientists who were to unravel the Great Ammonium Nitrate Mystery.

Neither of them could consider himself an ammonium nitrate specialist. Dr. Raymond M. Hainer had worked on problems of uranium chemistry for the Manhattan Project, on infrared spectroscopy, molecular structure, punch-card calculations and on an Information Theory of Olfaction—but not on ammonium nitrate.

His teammate, George Feick, had tested jet compressors, studied the bleaching of wood pulp, worked on a process for molding lenses from thermosetting resin and specialized in the fields of heat transfer—high vacuum, liquid oxygen, and dyestuffs.

To learn everything there was to be learned about ammonium nitrate, they had to start almost from scratch.

They burned and blasted the fertilizer, and sometimes it exploded and sometimes it merely burned. Among hundreds of scientific papers dealing with ammonium nitrate, not a single one yielded the information they needed. They studied the case histories of dozens of fires and explosions involving ammonium nitrate that had occurred during the last 40 years. But in hardly a single case was the cause of the fire or of the explosion clearly stated.

Sometimes the fertilizer might have been set afire by a cigarette; sometimes chemical impurities might have started a reaction that ultimately led to a fire and occasionally, but not always, to an explosion. Sometimes it seemed that the fertilizer had been blasted by high explosives; sometimes it might have generated heat and ultimately caught fire all by itself.

Then Hainer and Feick made their first important discovery. All of the case histories showed that ammonium nitrate had burned in boxcars and warehouses and ships—but that it had exploded *only in ships* and never in warehouses and boxcars.

From this they reasoned, assuming that ammonium nitrate could actually explode under certain circumstances, that there must be a factor outside of ships that prevents that explosion. Or, to tackle the problem from the other end: If burning without explosion is the normal thing for ammonium nitrate, then confinement inside a ship must create a new factor that can bring about the explosion.

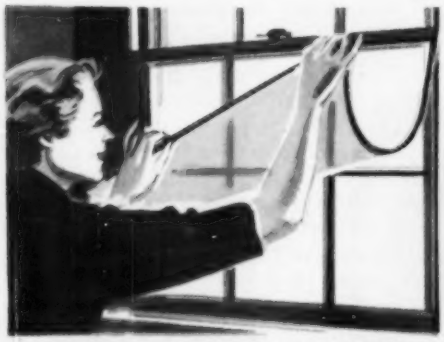
[*Continued on page 268*]

I'd Like to see them make...

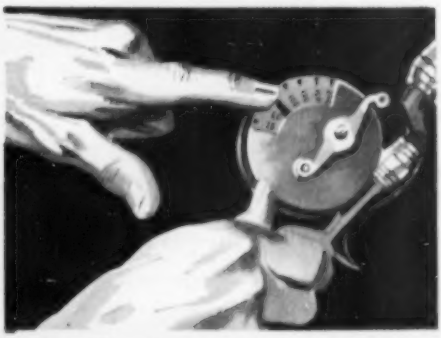
WALLPAPER IN TWO LAYERS, bonded together so top sheet could be peeled off when soiled, leaving room papered with another pattern.—*R. P. Caponi, Massapequa Park, N.Y.*

A TIRE-PRESSURE GAUGE that would give a temperature reading. Recommended pressures at various temperatures could be printed on case.—*Ray Welder, Wittenberg, Wis.*

HAND BRAKES ON TRICYCLES so kids would stop dragging their feet to cut speed when coasting downhill. They'd sure save on shoe leather.—*S. M. Glazier, Arlington, Va.*



ZIPPERS ON PLASTIC STORM WINDOWS. On a mild day, the zipper at the sill could be opened for ventilation, saving wear and tear on the tape.—*Edwin Weichman, NYC.*



A CASTING REEL WITH A CONTROL that could be set for distance. Then a fisherman wouldn't have to "brake" the reel with his thumb.—*Jerry Garrett, Clinton, Okla.*

Everyone has his own pet idea of a gadget that he would like to see in general use. The five ideas illustrated above were suggested by POPULAR SCIENCE MONTHLY readers. What is *yours?* We will pay $5 for each one published. Please use Government postcards only. Write name and address clearly. Contributions cannot be acknowledged or returned.

Gus Fixes a

For the kid's sake, Gus was bound he'd cure the mixed-up car that purred like a kitten until it warmed up—then quit cold.

By Martin Bunn

WHEN Barney Overholtz drove his 1952 station wagon into Gus Wilson's Model Garage, he was about as downcast-looking as anybody Gus had seen in a good while.

"How are you, Barney?" Gus greeted him. "I haven't seen much of you lately. Where have you been keeping yourself?"

"I've been pretty busy," Barney told him, "since I promoted myself from the paper route to delivering groceries after school and Saturdays for Eric Watt's market."

"That's how you tell it," Gus went on, poking the youngster playfully in the ribs. "The way I hear it is that you are spending considerable time chauffeuring Sadie Plevens around."

"Well, maybe I am," Barney admitted, flushing to the roots of his roan hair. "But I won't be able to much more. The way this car eats gas, I'll go broke and have to give up truckin'. Sometimes I wish I had my old 1941 Ford back again."

"That's peculiar," Gus said. "This six-cylinder job should give good mileage. Should get around 20."

"It should," Barney complained, "but it doesn't. I'm lucky to get 12. And sometimes she almost won't run."

Barney Does His Own Fixing

Gus didn't ask the young fellow why he hadn't brought the car in sooner. He knew. Barney had started his newspaper route with a third-hand 1941 Ford, with a crankcase full of water. Gus had managed to stop the water leak into the crankcase, but the old car had finally become worn out, and Barney had been forced to buy a newer vehicle for his new job. You couldn't, Gus thought now, help support the old folks, buy a good car, take out a girl, and at the same time pay garage bills. Barney was inclined to do his own fixing. Gus sensed that he must have been pretty desperate to bring the car in now.

"We'll take a look at it," Gus told him, lifting the hood.

"I worked on it some myself," Barney said, "but it didn't seem to do much good. The only thing I found wrong was that the felt in the air cleaner was sort of charred and burnt. I put in a new felt —maybe some of the old one got stuck in the carburetor."

"Maybe it did," Gus said, perking up his ears. "I wonder how that felt got charred—must have ignited some time from a backfire, before you got the car."

Gus started the motor, idled it, gunned it, shut it off.

"Sounds all right to me," he commented, wheeling over his tool kit.

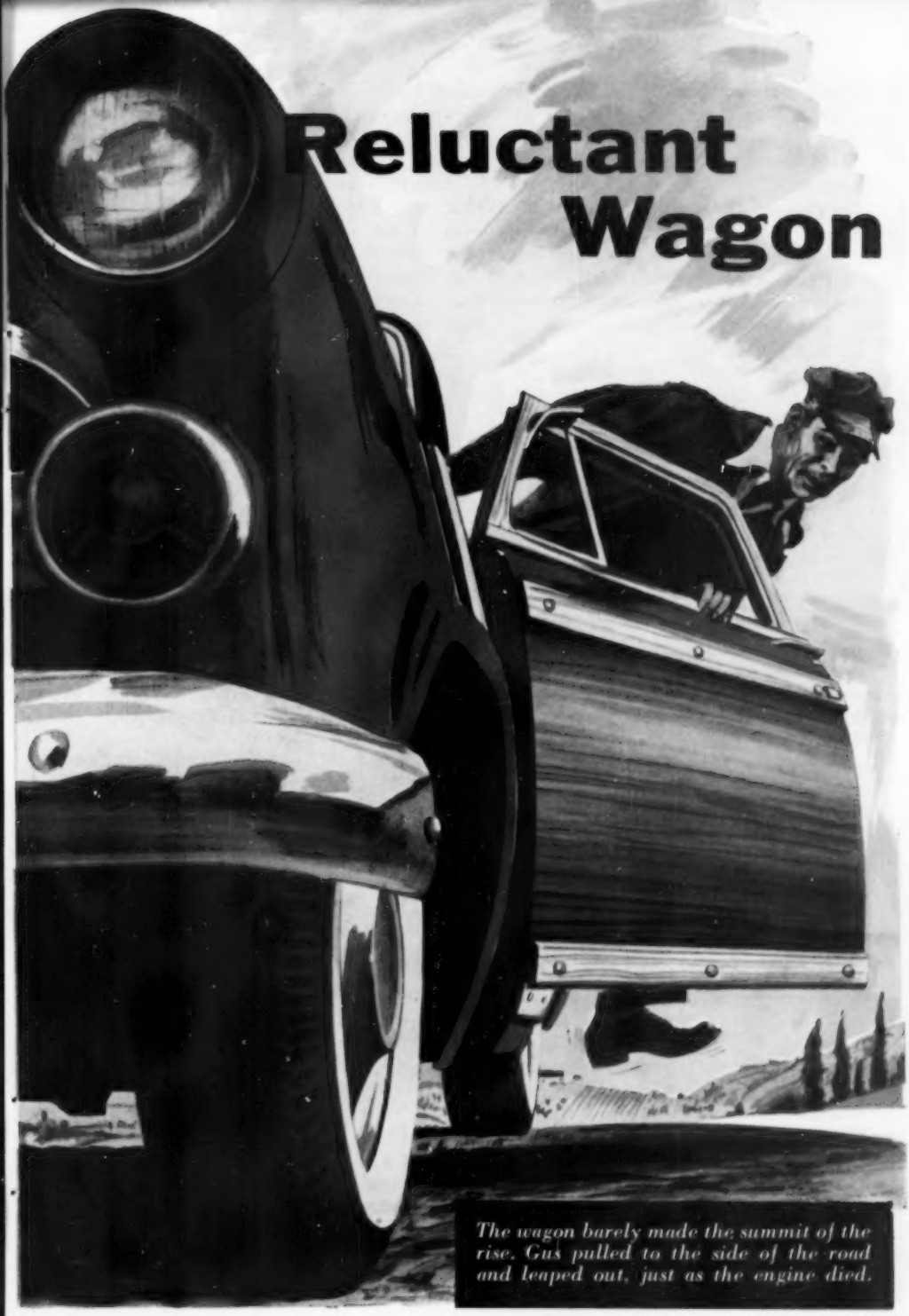
Gus Makes an All-Around Check

He removed the air cleaner, washed out the felt in solvent, cleaned the bowl and added fresh oil. He pulled the carburetor and cleaned it, carefully checking passages and screens, float setting. Replacing the carburetor, he snapped off the distributor cap, closed the points by rocking the car in gear, turned on the ignition switch, held the high-tension wire from the coil near the block, snapped the points with his thumb.

Noting the strong spark, Gus replaced rotor, cap and wire. He removed, cleaned, tested and set the plugs, made a compression test on all cylinders. Again he started the motor, listened to it with cocked ear.

"Sounds pretty sweet to me, Barney,"

Reluctant Wagon



The wagon barely made the summit of the rise. Gus pulled to the side of the road and leaped out, just as the engine died.

Gus told the youngster. "Full compression on all cylinders—good shape all around. Sounds like she's timed right, but we'd better check. Slow spark could cost you gas."

Gus cleaned the timing mark on the vibration damper, hooked up his strobe light, finding the timing only a hair off. He set the spark on the mark, made a routine check for loose wires, worn spots, battery terminals and ground.

"Let's drive her around the block, Barney," he said.

The car performed perfectly, and Gus turned it over to the youngster at the garage, charging him the smallest amount he dared without making him feel that he was getting special favors. Stan Hicks, Gus's young helper, knowing his boss's weakness for helping out youngsters just starting out in life, smiled to himself.

"Ran out of gas."

"If all our customers were kids, Gus," Stan said, "we'd be broke in a month. What was wrong with the car, anyway?"

"Hanged if I know," Gus said. "I never did find anything really wrong. Maybe he had some charred felt in the carburetor passages. I might have failed to see it when I blew it out."

Barney Calls for Help

Gus felt satisfied that he had given the car a thorough check, and was considerably surprised when Barney drove in the next day.

"She wouldn't take it this morning, Gus," he said. "Pa had to break out his car and deliver my groceries. And was he mad!"

"How'd the car act?" Gus asked.

"It ran fine at first," Barney said, "and then when it got hot—it was a warm day yesterday, you know—it began to miss. The farther I went the worse it got. Wouldn't pull the hat off your head. I phoned Pa from the Nolan farm and he came and picked me up. After we got the orders delivered we came back for my car. It ran all right then, but I brought it right in to you."

"Great!" Gus said, but he didn't feel that way. A stubborn look came into his eyes as he rolled up his tool kit and started the motor.

It seemed to Gus that he had never heard a motor that ticked them off better. But for the moment he was disinclined to trust his highly trained ear. He abandoned his usual method of working, and began using his motor analyzer and test panel.

What, he asked himself, would cause a motor to miss when real warm, and yet work perfectly when cold or ordinarily warm? Vapor lock? Too hot a type of plug? Faulty coil or condenser? Some sort of resistance building up in the ignition system? Loose connection or poor ground?

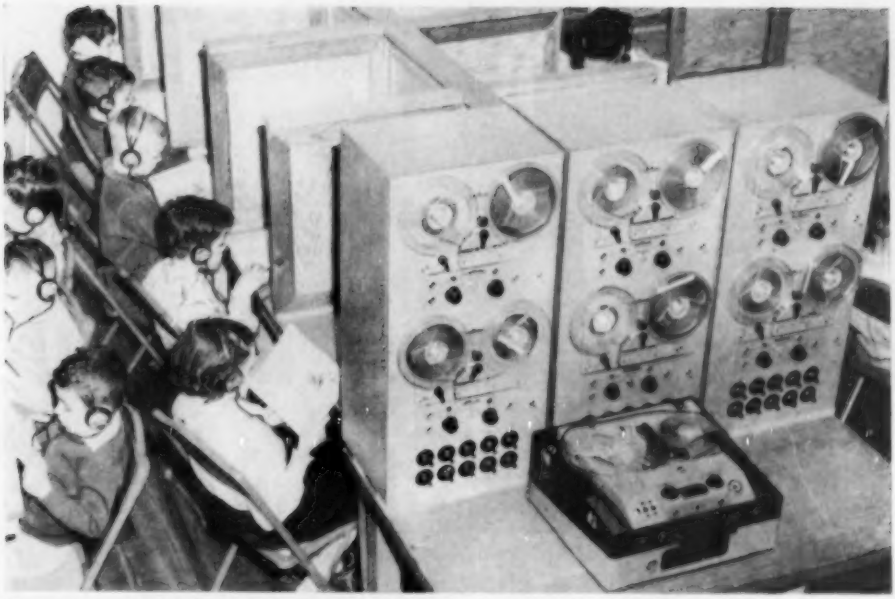
Gus went to work systematically. He tested the coil and condenser, installed new points, making certain that there were no hidden jokers in the distributor, such as a movable breaker point striking a screw head, or faulty insulation or ground. He checked valve setting, cam angle, wiring, connections. The further he went the more he became convinced that there was nothing whatever wrong with Barney Overholtz' car. Finally he buckled up everything and lowered the hood.

"Now," he said grimly to Barney, "let's really road-test her."

Twenty Miles and All's Well

It was a beautiful, mild spring day as they drove out of town. The morning sun was fast warming the air. Gus nursed the car along, varying speeds, hitting this hill fast, that one at slow pull, alert to the hum of the motor, the throaty

[*Continued on page 250*]



Lessons on Tape Help Students Learn the Three "R"s

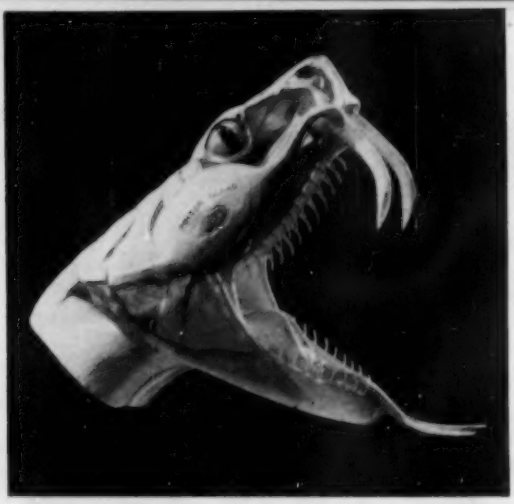
TEACHER is a tape recording for pupils at St. Scholastica Academy, Covington, La. As a supplement to regular instruction the youngsters listen to lectures recorded by university professors. Since the master control (above right) handles seven tapes at once, bright students can move ahead fast while slower children get needed repetition.

TV Helps Cure Eye Defect

BY WATCHING television on this set, cross-eyed children can learn to see with both eyes. The trick is a polarizing screen over the TV picture and polarizing spectacles. Unless the child uses both eyes, he sees only half the picture. American Optical Co., Buffalo, N.Y., devised it.

Chair-Lung Helps Polio Patients

POLIO patients move around with their iron lungs in Miami Valley Hospital, Dayton, Ohio—hospital attendants made a wheel chair with a chest respirator built into it. Above, young Janet Ruehling takes a trial spin in the unit after 15 months' confinement in bed.



THIS FEARSOME MODEL shows you a pit viper's catlike eyes, its pits (between eyes and nostrils), its flesh-puncturing fangs.

Science Arms You Against Snake Bites

A powerful new drug may save your life, but your best bet is still to walk with caution.

By Wesley S. Griswold

THOUGH 2,500 kinds of snakes share the world with us, fewer than 200 are worth worrying about. Of those 200, fortunately, only about three dozen—rattlers, moccasins and coral snakes—need concern those of us who live in the U.S. But they are among the world's deadliest snakes, and one kind or another is on the loose in every state of the Union.

Each year around 40,000 people throughout the world—and several times that many horses, cows and dogs—die of snake bite. They top the list of victims of animal venoms of all kinds—snake (both land and sea), insect, lizard, fish and mammal. The venoms are sufficient cause for alarm to have led scientists to meet recently in California for the first international conference on the subject.

This spring, however, a powerful new

Cottonmouths stick to swamps and lakes but don't get north of Virginia's Dismal Swamp.

The careless rock climber may suddenly find himself face to face with an aroused rattler.

weapon, easy to use, is at hand with which to counteract the venom in case a poisonous snake bites you. Wyeth Laboratories have produced a readily applied antivenin—the technical term for an anti-snake-bite serum—that not only is 50 percent more effective than any previous one but neutralizes the venom of every pit viper in the world. That includes nearly every poisonous snake in North and South America.

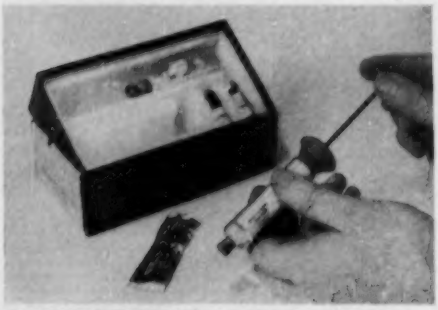
The sole exception is the coral snake, a relative of the cobra. But, despite the fact that the young daughter of a New York family managed to find one in Florida and bring it north safely in a candy box before an appalled scientist friend of her parents identified the pet, coral snakes are elusive and relatively rare.

All rattlesnakes and moccasins, and the tropical fer-de-lance and bushmaster are pit vipers. The "pit" does not refer to a hole in the ground but a hole in the head —two, in fact. They look like nostrils but are cups for delicate membranes that are extremely sensitive to variations in heat. The pits function like a kind of radar. They and the reptiles' keen sense of smell

WHAT YOU MAY FIND under a cow's skull, rock or chunk of wood makes it wise to lift objects at the top, and at the side away from you.

HIGH LEATHER BOOTS and long trousers are the best protection for your legs in snake country. The menacing reptile below is a copperhead.

How to use new snake-bite remedy



ASSEMBLE SYRINGE by screwing plunger rod into vial of distilled water. Needle is in tinfoil.

REMOVE FOIL from needle and insert its short end into the sealed stopper of the syringe.

BREAK PROTECTIVE NECK of the vacuum vial containing antivenin in dry, crystalline form.

THROUGH DOUBLE-END NEEDLE, vacuum draws distilled water in to dissolve the dry serum.

MAKE INJECTION in muscle above wound after drawing dissolved serum back into plunger.

more than make up for the fact that pit vipers, like all snakes, have no hearing and are so nearsighted as to be practically blind in the dusk or dark, when they usually feed.

To test the response of pits and nostrils, some brash experimenters once blindfolded a rattler and encouraged a well-protected man to walk back and forth in front of it. The snake struck repeatedly at exactly the strategic instant and with perfect aim.

Druggists Rent Out Kits

Wyeth packages its antivenin in a conveniently small kit. A series of photos at left shows how simple it is to use the outfit.

Since the antivenin is quite expensive ($12.50), many a druggist in states where poisonous snakes are common has started renting kits to hunters, fishermen and campers for a small daily fee.

Actually, snakes would like nothing better than to stay out of men's way. Even as virulent a snake as the African boomslang is as skittish as a doe, streaking for cover at the faintest unfamiliar scent, as if it didn't have a drop of venom in its body. But a poisonous snake will halt and strike if it feels itself cornered, and it has a regrettable tendency to leap to that conclusion.

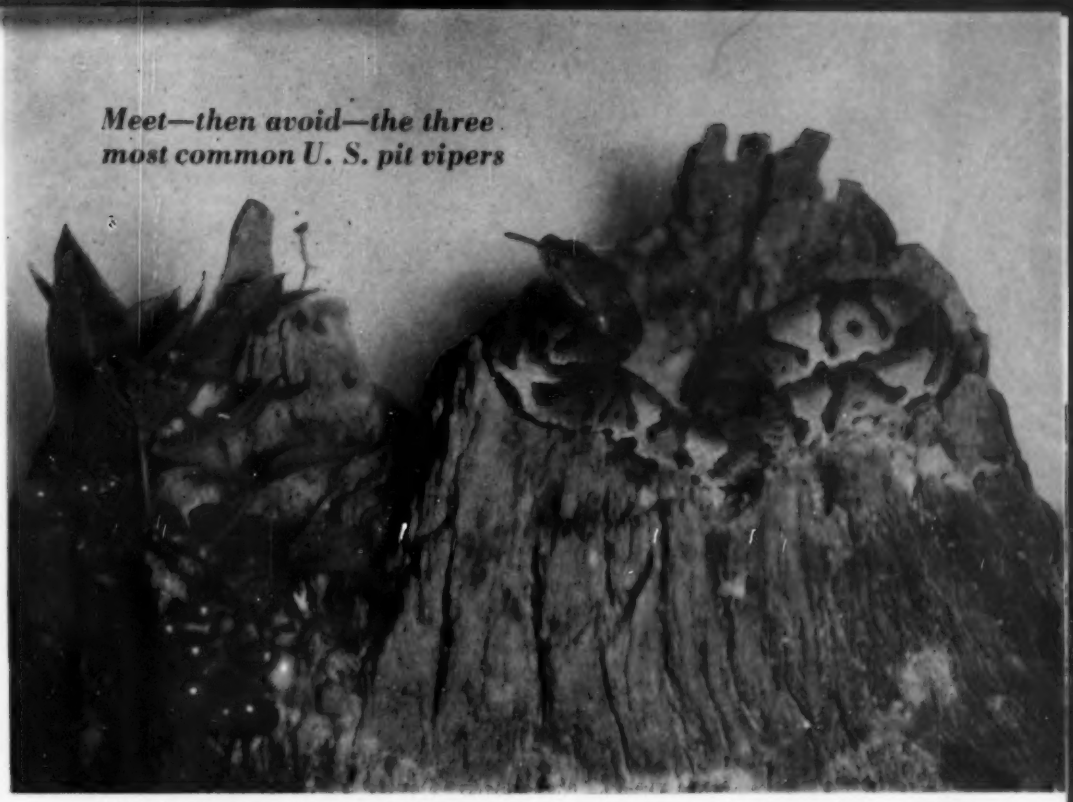
In spring, those poisonous reptiles that inhabit the northern half of the nation awake from a long winter's nap as soon as the frost has left the ground. They emerge fiendishly hungry and in no mood for fooling. Their poison glands are full of venom and their tempers are extremely short.

Spring Brings Out the Victims, Too

At the same time, pallid workers are emerging from offices and factories to try the streams for trout, burn brush, watch birds, hike or simply sit on rocks in the welcoming sun. Often a musing fisherman or a rapt ornithologist absentmindedly crosses the path of a venomous reptile strictly intent on business.

If you boldly venture into snake coun-

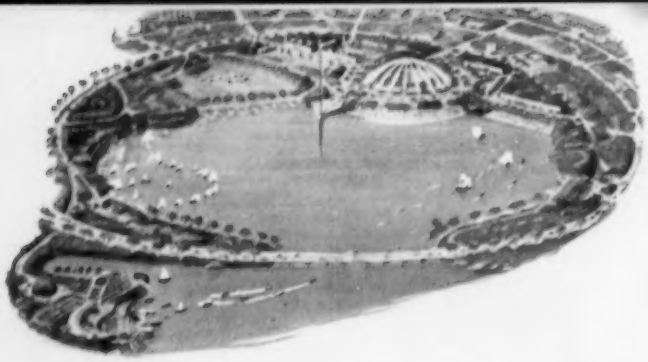
[*Continued on page 252*]



The deadly copperhead moccasin is one of the commonest poisonous snakes in the U.S.

TIMBER RATTLESNAKE (below), usually yellow or tan but sometimes black, is found from New England to northern Florida and as far west as Texas.

OUT OF ITS ELEMENT, this big water moccasin (right) fails to show the white lining of its mouth, which has earned it the nickname "cottonmouth."



CIRCLING A LAGOON 10 miles north of Miami, the Center will aim to look like a vast subtropical garden. An amusement section, picnic and swimming facilities, horticultural and agricultural exhibits, a zoo and a playground for children are intended features.

Florida Plans New-World Fair

HEMISPHERIC FELLOWSHIP will undoubtedly blossom in the Club of the Americas (below), a novel hotel and restaurant of concrete, steel and glass. The Center is expected to attract 15,000,000 visitors in its first year of operation.

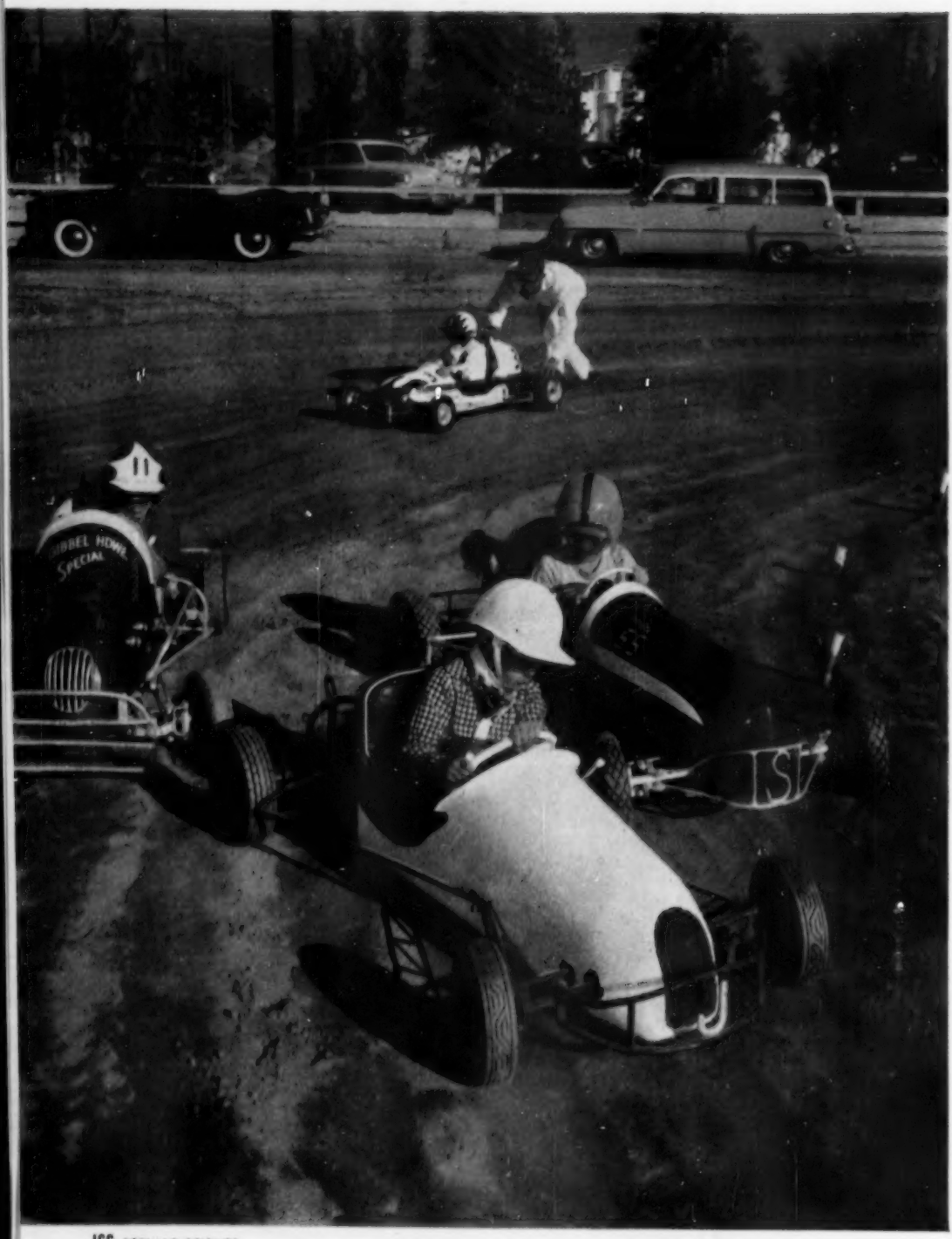
AN ENDLESS show, combining a trade fair with a fun fair and including top-grade cultural events as well, is expected to open beside a palm-fringed lagoon in North Miami, Fla., three years from now.

It will be a permanent world's fair that its sponsors hope will dwarf the celebrated temporary world's fairs at Chicago and New York during the Thirties. Its name: Inter-American Cultural and Trade Center.

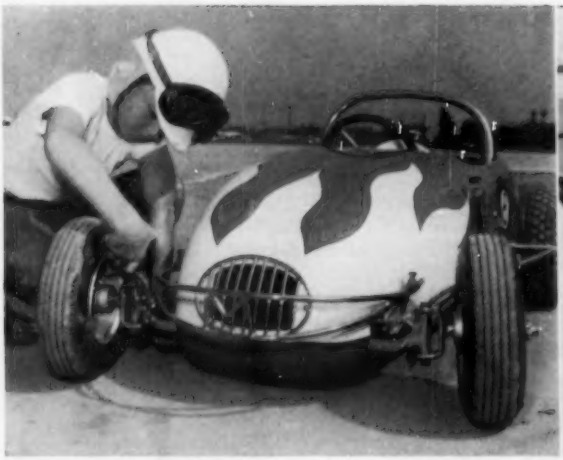
Planned to provide an enduring and beautiful showcase for exhibits from all the nations of North and South America, the Center will cover 1,800 acres.

MONORAILWAY of aluminum and glass, barely visible under a row of palm-tree tops at left center in the drawing above, will carry sightseers for an elevated tour of the Center's grounds. Electronically controlled, air-conditioned boats are planned to cruise the lagoon and the Center's canals.

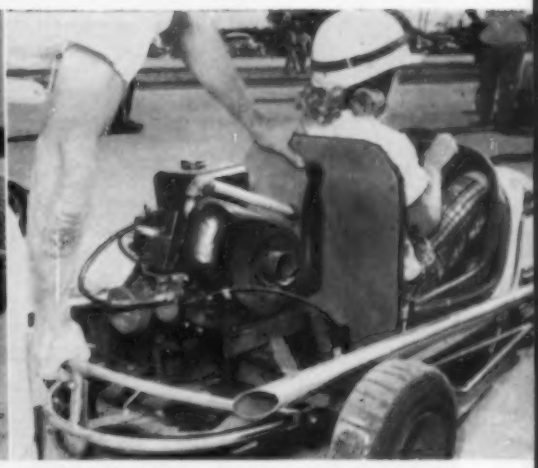
MANY-PURPOSE AMPHITHEATER of advanced design will be the theme center of the permanent fair, scheduled to open on Jan. 1, 1958. Restaurants will feature native dishes of the Americas. Entertainments will include ballets, rodeos, dramas, concerts, art shows, sports contests.


11
SPECIAL
1SF

Youngsters Race Midget Midgets



DRIVING MECHANIC. Eleven-year-old Mike Olivero makes with a wrench on the front-end assembly of his car. Dad takes over on tough jobs.



WOMEN DRIVERS are in the running too. Donna Richards, seven, awaits flag as her father lifts the rear of her car for drop starting.

Dads build the cars, but America's youngest drivers take the wheel in this new racing fad that's fun for the whole family.

By Hi Sibley and Andrew R. Boone

DIRT-TRACK racing is child's sport now—and the kids love it. So do the fathers who convert wheels, one-lung engines and junked auto parts into tiny hot rods. It's hard to tell who has more fun.

Few grownups could shoehorn themselves into these midgets. They're tailor-made for youngsters four to 12 years old. Some of these drivers can't read yet—but they run real races on miniature dirt tracks, pitting their homemade cars and driving skills against each other like Indianapolis veterans.

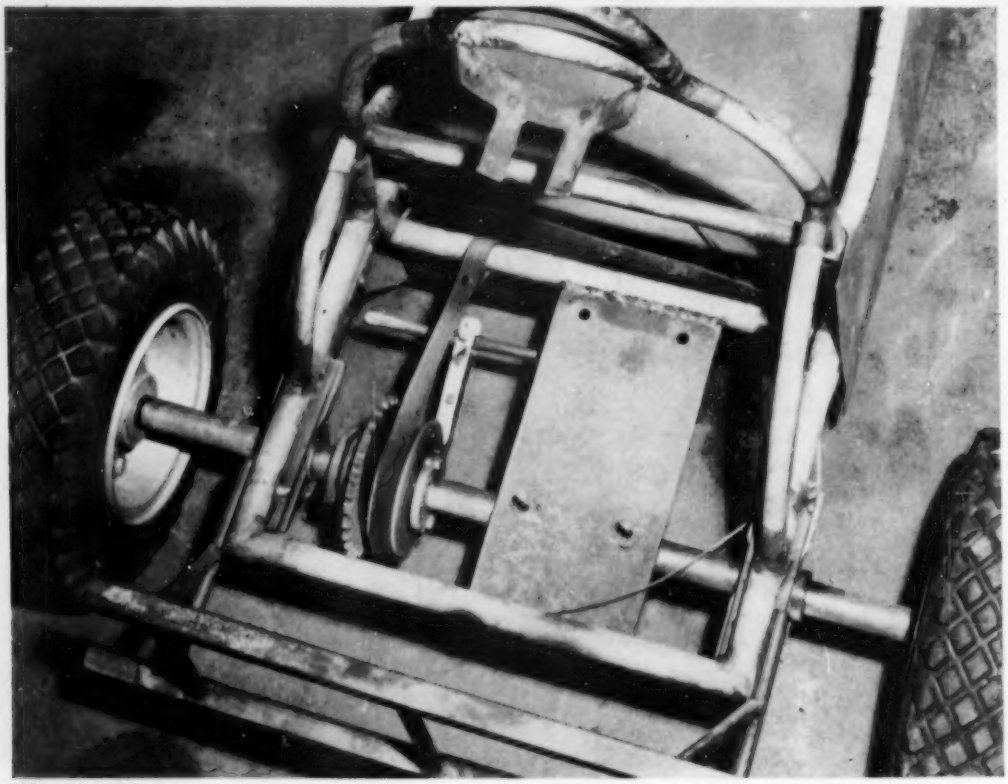
Jams on the turns are frequent as drivers battle for the rail. On the straightaways, throttles are floorboarded for speeds up to 25 m.p.h.—plenty fast when you're sitting only 2½" above the track. The small fry quickly learn to steer out of skids, nurse the wheel around turns, and make a fast getaway on the break.

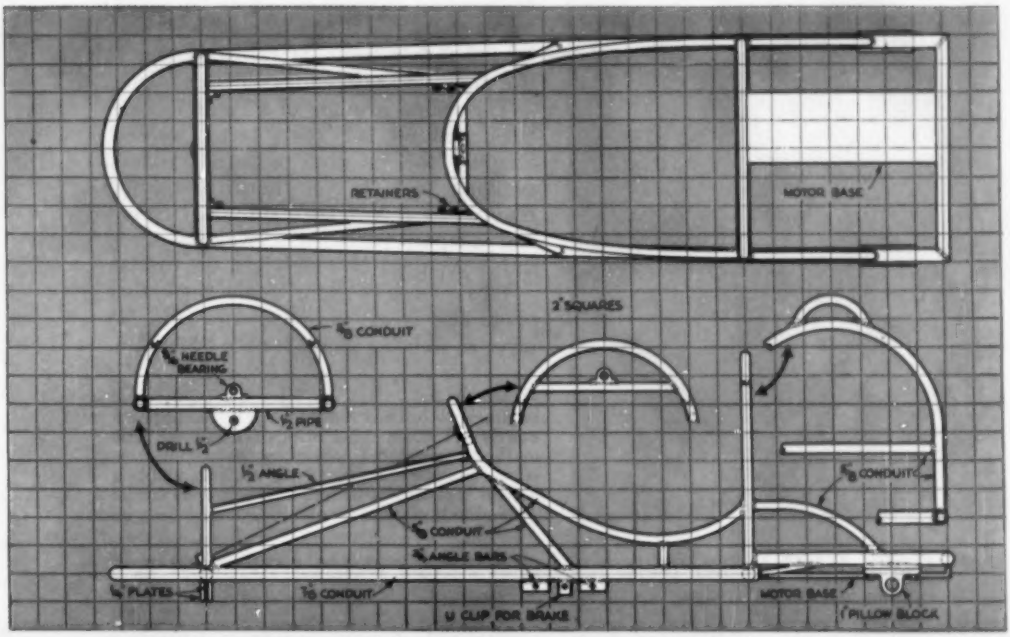
Born in California. Officially designated as one-quarter midgets, the little crates were first raced at Hemet, Calif. They are now running at Upland, Anaheim and Norwalk, too, with plans under

KIDS TAKE SKIDS as a matter of course around tight turns. Although races are in grim earnest, low center of gravity, crash guards and bumpers keep them safe. *Color photo by Walt Frisbie.*

Johnnie Motte, nine, in the winning car his dad built. To date he has taken 15 trophies.

WITH ENGINE OUT, rear end of Johnnie's car shows single drive sprocket and simple V-belt brake. The comparatively heavy 1" axle runs in pillow blocks bolted below the frame sides. The motor base is a light steel plate turned up at the rear and welded to the frame crosspieces.





ALL-METAL FRAME, required by One-Quarter Midget Racing Association rules, can be made of two sizes of electrical conduit. This can be shaped with an electrician's or plumber's bending tool. Use low current to arc-weld it, as it burns easily. On the right side, the U clip is omitted and rear piece of angle set forward for bolting on the guard rail. Put the steering shaft through its bearings to align them when these are being welded on.

way to organize clubs at Riverside and San Bernardino. Chances are that the sport will jump state lines soon.

Cars are clutchless. The cars are just about as simple as they can get. There is no clutch or transmission; the engines are started by pushing, or by getting them to the compression stroke, raising the rear end, and dropping the wheels to the ground. Cars are stopped by cutting the ignition and applying a hand brake.

The usual drive is by V belt to a jackshaft (if the engine hasn't a built-in reduction gear) and by sprockets and a drive chain from the jackshaft to the rear axle. The problem of a differential is neatly solved by not having any. Only the right-hand wheel is driven.

When a driver steps on the gas, the car accelerates. When he throttles back, engine compression acts through the fairly high gear ratio (at least 8 to 1 by association rules) to haul the car up sharply.

Steering is direct and hair-trigger sharp, from a lever on the steering shaft to the wheel knuckle (watch that curve, kid!). Maximum wheelbase under association rules is 50″, minimum tread 28″, and greatest ground clearance 2½″.

This adds up to putting the driver (and center of gravity) so low that none of the little cars has ever turned over. Front and rear bumpers plus knerfing bars (guard rails) at the sides prevent wheels from locking.

Only four-cycle engines are permitted. Although displacement is limited to 7.5 cu. in., which would indicate an output of about 2 hp., builders are allowed to remove the governors. This lets engine revs climb to about 6,000 r.p.m. The little mills then develop up to four hp., a right spry amount of power for a car not much bigger than a roller skate and weighing 150 to 300 lb. fully loaded.

Plans for a winner. One of the champs is nine-year-old Johnnie Motte of Nuevo, Calif., who has taken 15 trophies

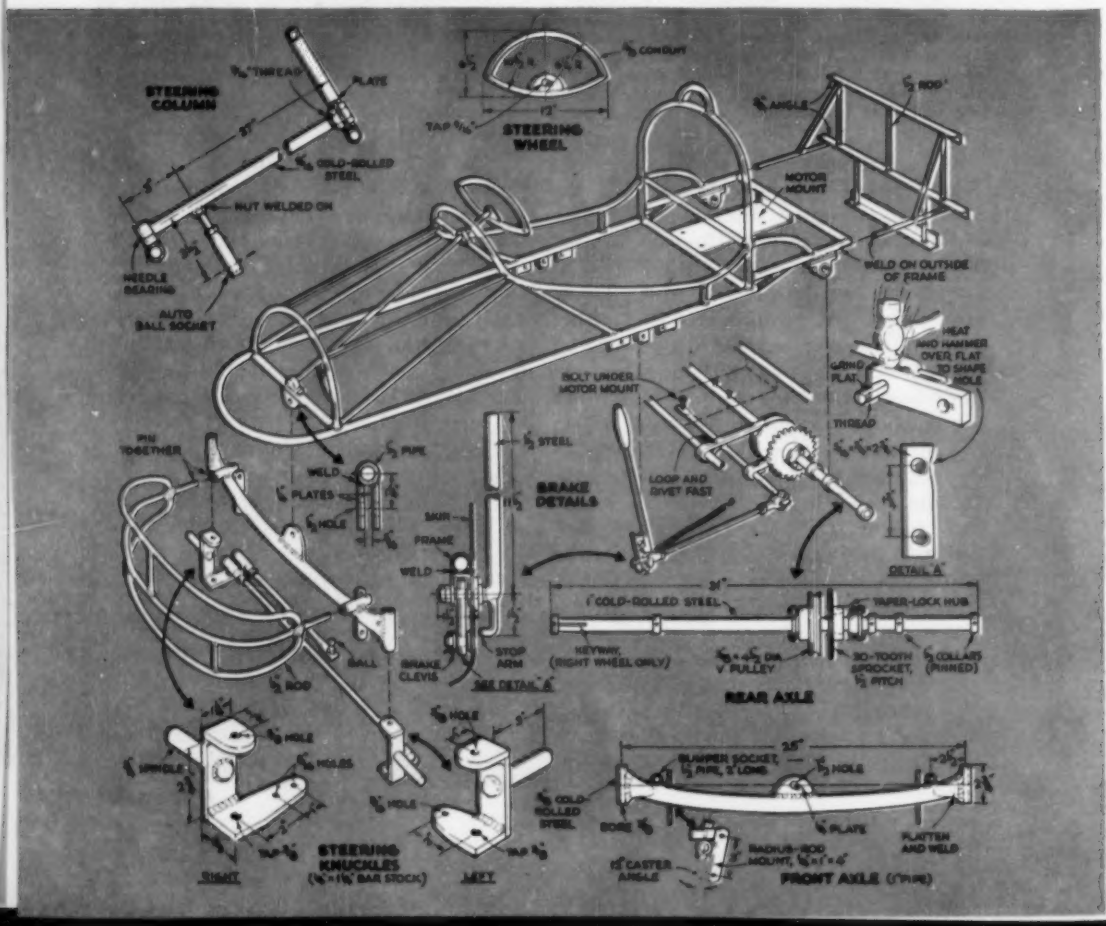
to date and recently set a new lap record for the local track. His winning car, built by his father, John Motte, is shown in the photos and drawings on these pages.

The frame is made of ⅝" and ¾" electrical conduit, all joints being welded. Shaping can be done with a standard bending tool. If you haven't welding equipment, it will pay you to take the cut and shaped parts to a welding shop rather than to bolt or rivet the frame.

Two pieces of light angle stock that brace the cowl structure forward also serve as welding points for the body skin.

POWER PLANT in Johnnie's Jet is a Continental engine with built-in reduction gear. An approximately 3:1 chain drive brings the over-all ratio to the required 8:1 minimum. Removing governor increases engine revs, almost doubling power. Gas tank is mounted in a special cradle welded to back of fire wall.

FRAME IS WELL BRACED in front and back of the cockpit, virtually one piece because all joints are welded. Brake handle, which is mounted after body is on, goes through forward hole in guard rail. The rear bumper is welded on, front one pinned in its sockets.



The foremost cross member is ½″ pipe, and has two steel plates welded to it for the front-axle pivot. Short pieces of ¾″ angle are welded midway of the frame for attaching the radius rods and guard rails. On the left side, a U-shaped bearing supports the brake lever.

Autos supply fittings. The back of the frame is stepped upward about an inch, and the motor base dropped from it about the same amount. Welded to the forward and dash cross members are 9/16″ needle bearings salvaged from automobile universal joints. The upper one has its cap cut off, so that the steering shaft (also from a junked car) can run through it.

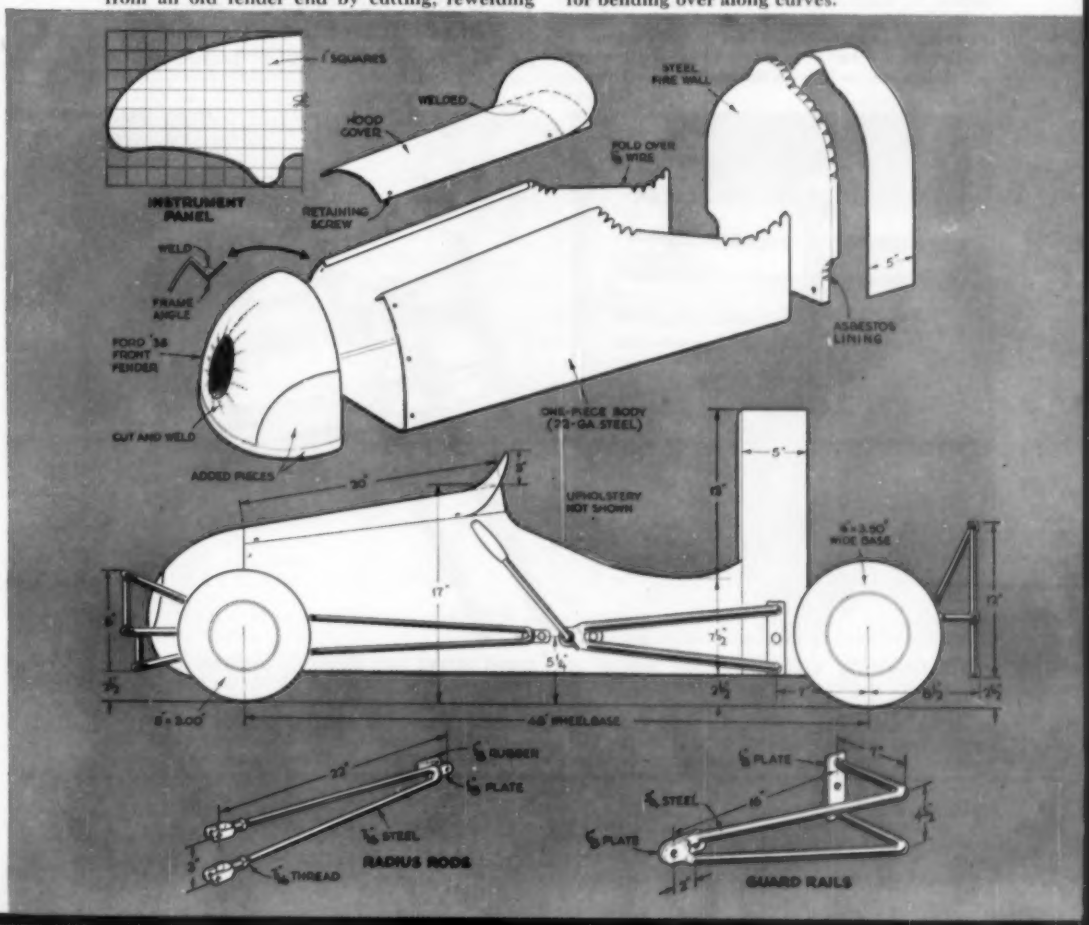
Other steering parts such as the tie rod, ball-and-socket joints, and clevises can also be taken from old cars. Steering knuckles are built up by welding pieces of ¼″-by-1¼″ steel bar together.

Spindles are made of ¾″ shafting. Shoulder each one down slightly 5/16″ from one end. Drive it into a close-fitting hole in the knuckle, peen over, and weld from both sides.

Front axle is dropped. Bend the 1″-pipe axle so that a straight line would pass through the pivot hole and the center of each kingpin socket, as shown in the drawing. Hammer the ends of the axle flat before welding the sockets on. These should have a 12° rearward slant to provide front-wheel caster.

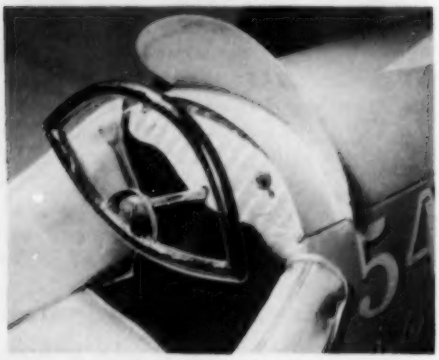
Pillow blocks are bolted to ¼″ steel plates welded under the frame members. They can be ball bearing or plain; some builders prefer babbit bearings because they are less easily damaged by track

BODY IS IN FOUR PARTS, the largest a single sheet bent up to form the sides. Nose was made from an old fender end by cutting, rewelding and adding pieces. Asbestos behind fire wall shields driver from engine. Edges are notched for bending over along curves.



grit. Make the axle of 1″ shafting—lighter axles have been known to bend from rounding curves at high speed.

The keyway is needed on the right-hand end of the axle only. The other wheel may be bushed or provided with ball or roller bearings to turn on the axle.



STEERING WHEEL of Johnnie's car was made by welding conduit to a steel plate. This can be tapped to screw onto the steering shaft, and locked with a nut on each side. Crescent shape is practical because the wheel is moved only a fraction of a turn. Note padding on the cockpit edges, ignition switch on the dash.

Both wheels should be retained by collars pinned to the axle, not by setscrews.

The sprocket and the V pulley used as a brake drum must be positively locked on the axle. They can be bought with special hubs as shown. Loosened, these make it easy to align the parts.

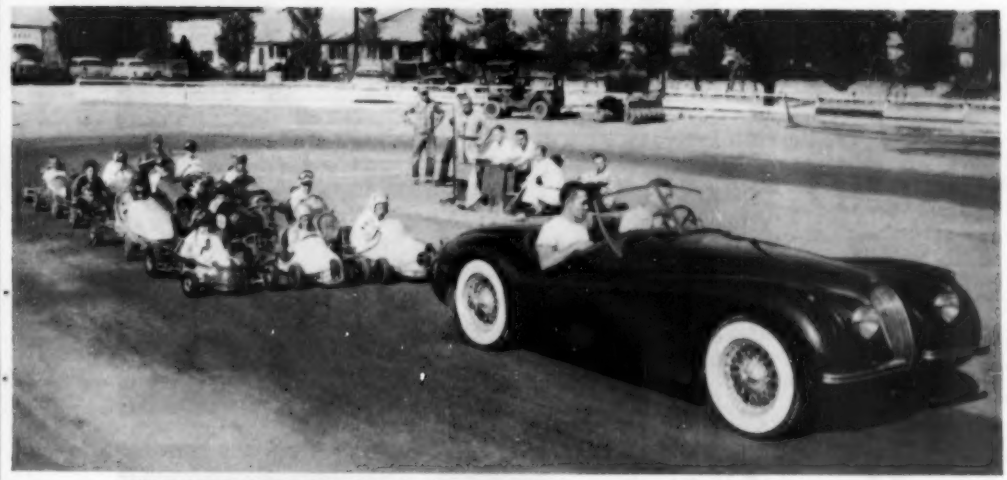
Brake band is a V belt. A piece of V belt, looped and riveted around a frame crosspiece, is similarly fastened to a lever that pivots on a bolt welded below the engine mounting plate. The other end of the lever is connected by a clevis and rod to the brake handle.

Motte used an ingenious dodge to assemble this without welding, for it had to be installed after the body was on. The short leg of the lever was ground flat, and the drilled clevis lever heated red hot and hammered over it to form a half-moon hole. A short stop arm keeps the brake handle from falling forward.

Shaping the body. Motte used a single sheet of 22-gauge sheet steel shaped to a U section for the main part of the body, the lower bends being

UNDER-THE-HOOD VIEW shows the bottom of the steering shaft in its needle bearing. This is welded directly above the semicircular plates in which the axle pivots. The steering lever screws into a nut welded to the shaft. The throttle (at lower right) is hinged directly to the sheet-metal floor of the body.

RIGHT FRONT END shows sturdy steering action. The front axle is free to tilt on its center pin. The radius rods, attached through auto clevises to the two ends of uprights welded to the axle, pivot on a single bolt at their rear ends. Tie rod and link have ball-and-socket joints from junked cars.



ROLLER-SKATE INDIANAPOLIS. A pilot car leads the pack for a lap, then pulls off to let the midgets fight it out. Being unlicensed, the racers are hauled to the track on trailers. With Hi Sibley (driving big car) is James Ishmael, president of the association.

rounded. The straight top edges are turned into the angle struts and welded.

The hood cover is another piece shaped to a shallow curve, with the upswept cowl made separately and welded on. It can be attached with aircraft cowl retainers (Zues screws) or with ordinary bolts.

Toughest shaping job is the nose. Motte made it from part of a 1935 Ford front fender. Radial cuts in the front were rewelded to form the sharp radius there. You might find a large headlight shell or other part that can be adapted.

The radius rods and the guard rails must be attached after the body is fitted. Both are made by welding pieces of plate to steel rods. Thread the radius rods for auto clevises so that they can be adjusted to maintain kingpin caster.

The throttle is a plate welded to a large hinge, which is bolted to the bottom skin. From it a woven-wire cable runs over two small pulleys to the carburetor. A spring shuts the throttle when foot pressure is released.

If the engine to be installed does not have a built-in reduction unit, you will need a jackshaft to bring the over-all engine-to-axle ratio to at least 8 to 1. END

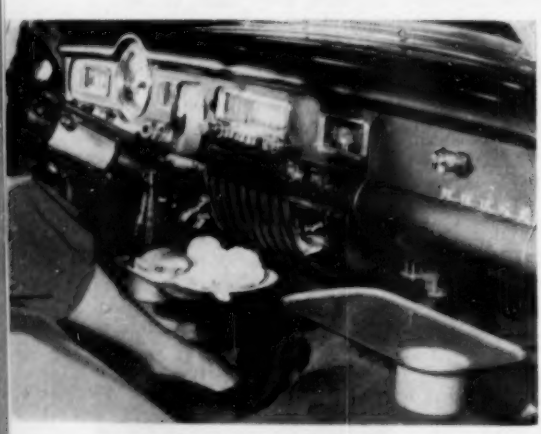
Official Specifications for Building One-Quarter Midget Racers

WHEELBASE: 50" maximum, center to center
TREAD: 28" minimum, 30" maximum, center to center
GROUND CLEARANCE: 2½" maximum to bottom of body
HEIGHT: 26" maximum
WHEEL DIAMETER: 12" maximum, 8" minimum
DRIVE RATIO: Minimum 8 to 1 over-all
STEERING: Direct
FRAME: All-metal construction
FIRE WALL: All-metal, between driver and motor
ENGINE: Four-cycle only, 7.5 cu. in. maximum displacement (not to be increased)
SWITCH: Off-on ignition switch
BRAKE: One-wheel brake
DRIVE GUARDS: Covers on all chains and sprockets exposed to drivers or handlers
CRASH GUARDS, BUMPERS: Guard rails at rear wheels; bumpers front and rear. Rear bumper strong enough to permit use of push car, with top bar 8½" minimum from ground, bottom bar maximum 2½" from ground
DRIVER'S EQUIPMENT: Driver must wear a safety belt, an approved helmet, and unbreakable goggles with no metal frames
For additional information, write Racing Chairman, One-Quarter Midget Racing Association, Hemet, Calif.

1. Clip-on Cables Boost Battery. Better than a push, especially if you have automatic transmission, a pair of clip-on cables will give a dead battery a boost from another car. Plier-type spring clips at the ends of each jumper make firm contact with the battery terminals for transfer of an emergency charge sufficient for getting the car started. The handles are insulated to prevent shock.

New for Your Car

3. Sun Visor Holds Road Map. Replacing either the left or right sun visor, this map case carries its maps on rollers that turn to the section of the country you are traveling in. It comes with a map of the United States on five north-south strips which are loaded like film in a camera. One of two models is self-lighted without glare.



2. Dash Tray Serves Snacks. A tray that clamps to the instrument panel and swings from under it simplifies lunch on the road. This one has a depressed cup to steady a pop bottle. Available for rear-seat passengers is a similar tray with a lip held between door and window glass.

4. Plastic Cloth Polishes Car. Chamois simulated from plastic now comes in a size marketed as a car polisher. According to the maker, it will outshine real chamois. It's washable when soiled.

Further information on these new car products can be obtained from: 1. Mueller Electric Co., 1600M E. 31 St., Cleveland 14; 2. Autotray Co., Inc., 3901 E. 26 St., Indianapolis 18; 3. Rockford Engineered Products Co., 2324 23 Ave., Rockford, Ill.; 4. Calex Co., 4215 Troost Ave., North Hollywood, Calif.

1. Scaffold in Kit. Five working assemblies are possible with six 6′ tubular-steel frames that come in kit form. You can make a 6′ box-type scaffold, a 6′ or 12′ leaning scaffold, three 12′ ladders, or a 4′ worktable support by turning the box scaffolding on its side. Included are wall brackets and nonslip rubber feet. The design is for one-man assembly.

New for Your House

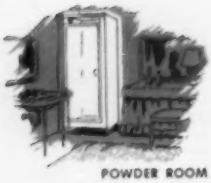
2. One-Coat Finish for Wrought Iron. Containing its own rust-inhibitor, a new outdoor metal finish saves you time by brushing on with one quick-drying coat. Available in quarts, pints and half pints, it comes in six pastel decorator colors plus black, white and aluminum.

3. Control Springs Repair Sash. If you'd like to remedy a broken sash cord without taking out the window, control springs can do the trick. They are also useful in stopping window rattle. The controls, in 1¾″ regular or 1″ width, are pushed up between sash and jamb where they are anchored by embedded prongs.

4. Aluminum Roofing Rolls On. You just roll out this corrugated-aluminum roofing and nail it directly to the rafters. Since it runs crosswise, it needs no sheathing for support, and it comes in long rolls so you don't have to make any end joints.

Further information on the products shown on this page can be obtained from: 1. Safway Steel Products, Inc., 6234 W. State St., Milwaukee 13; 2. George Koch Sons, Inc., 2100 W. Ohio St., Evansville, Ind.; 3. Ideal Brass Works, Inc., 252 E. 5th St., St. Paul, Minn.; 4. Quaker State Metals Co., P.O. Box 1167, Lancaster, Pa.

Need an Extra Shower? Try a Prefab


POWDER ROOM

BASEMENT

BACK PORCH

UTILITY ROOM

CLOTHES CLOSET

ATTIC

DEN

By Jerry Parker

Kiss those morning traffic jams in your bathroom good-by, with a shower you can put anywhere.

I INSTALLED a prefab shower after supper the other evening and used it before I went to bed. You've heard how some jobs are a lead-pipe cinch? Well, this was a bedroom-slipper snap.

1 FIXTURE PANEL, with cutouts to take plumbing, goes up after the receptor unit is set in place and leveled. Screw on at either side. Some models require calking of joint.

2 THRESHOLD COMES NEXT, also screwed in place to receptor and first side. Then attach other side wall. Keep protective paper on the base until you've finished the job.

Prefab corner models with glass doors, as well as box designs, come in almost any color.

I wore slippers not only because it was easy, relaxed work, but also to protect the receptor, or floor, of my cabinet shower.

You're probably wondering how I hooked up the water connections and the drain so fast. I didn't. The connections had already been roughed in according to the exact measurements supplied with the shower manufacturer's instruction sheet. (For do-it-yourself home-plumbing

3 INTERLOCKING BACK WALL is whacked into tight fit, working from bottom up. For a block I used a length of two-by-four wrapped in old toweling held on with rubber bands.

4 TOP FRAME helps hold shower together and gives the unit rigidity. Use your padded block for driving it firmly into place, and then fasten to the sides with screws.

5 FITTINGS INSTALLED, the shower curtain goes up. Fixtures are standard equipment with your prefab shower, include valve handles, soap dish and even a plastic curtain.

6 HAND ME THAT TOWEL, BUB. Only thing not built into my shower was a towel rack. Same night I installed the prefab job, I was able to use it before going to bed.

instructions, see PSM, March '55, p. 221.)

There's a unique thing about our shower—it's not in the bathroom. There was no space there, yet we had to have extra facilities. We put the shower in the dressing room, next to our bedroom. It's in line with the bathroom, so the plumbing wasn't difficult.

People who see our shower for the first time usually do a double-take but consider it a good idea. Most of my wife's friends go away with an I-must-tell-Joe-about-this gleam in their eyes.

Showers can go anywhere. I checked with an architect about our unconventional shower notion. He wasn't surprised. Prefab showers, he said, are installed just about anywhere in the house these days—basement, utility room, back porch, powder room, inside the entrance from a patio or in the recreation room.

"What about the attic?" I asked.

"Why not?" said the architect.

My friend expounded on the convenience of an extra shower in a part of the house other than the bathroom. He had statistics on how it speeded up bathroom traffic.

I smiled. "Wonder how I figured it out myself," I said.

Anyone who has mastered a toy construction set can put up a prefab shower. The only tools you need are a level, hammer, screwdriver, calking or putty knife, and a padded block.

The walls of a prefab shower and the receptor just screw together, with calking usually required in a few joints. The showers come neatly packaged with complete instructions for installation.

Designs for every need. Prefab showers range in size from 32″ to 40″ square and from 75″ to 80″ in height. You can get them in pastel colors. There are fancy corner models complete with overhead light and glass door. There are models you can build in. Prefab shower walls are made of sheets of porcelain-enameled iron or galvanized-bonderized steel. Receptors are of steel or precast concrete slab with stone or marble chips. You can get data and prices from any dealer in bathroom fixtures. END

The mechanic rattled the tail-pipe against the gas-tank bracket. "That's the noise," the customer said. "It sounds up here in front."

A Mechanic Checks A Rattletrap

. . . and tells how you can rid your car of annoying noises.

By Glen F. Stillwell

"CAR squeaks and rattles are generally acquired," the mechanic said. "They are not built into the car, and they are seldom what they seem."

I had driven to my neighborhood garage to complain about a door rattle.

"It doesn't rattle all the time," I told him. "Just now and then when I start out. Probably needs new rubber bumpers."

The mechanic shook his head.

"Your car's new. It shouldn't need anything like that. I think I know what your noise is, and it isn't a rattle—it's a squeak."

He put an end to the "squeak" by

smearing a little glycerin on the rubber door lining.

"What happens," he explained, "is that all doors must have a certain amount of up-and-down motion or they'd be hard to open and close. When the rubber lining is new and dry, this motion makes a rubbing sound like a rattle. It disappears when the rubber wears smooth."

It was a warm spring day and I decided to loaf around the garage a while, an instructive pastime that I indulge in as often as possible.

Another customer had been waiting while I talked to the mechanic. After pulling my car to one side, I strolled over to the hoist where the mechanic already was starting a quick grease job for him.

A front-end rattle. The customer was poking his nose under the front end. "Maybe I can find that rattle," he said. "Guess I'll have to—if anyone does."

"Is it in the front end?" the mechanic asked.

"Sure thing," the customer replied. "Everyone says so—and I've had mechanics clear across the country try to find it."

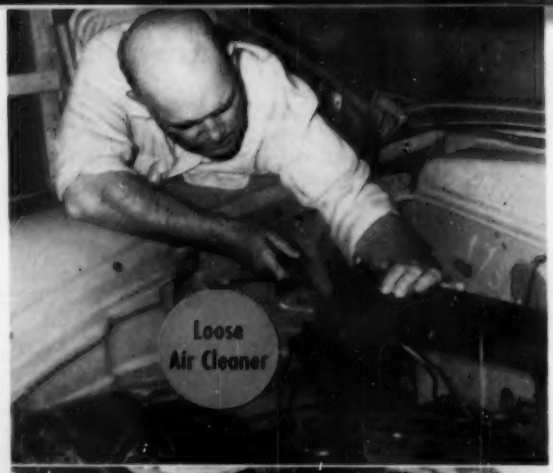
The mechanic, working at the rear of the car, suddenly put down his grease gun and I saw him looking closely at something. Then he glanced at the customer, still poking around the front end.

Sounds are telegraphed. Reaching up, the mechanic rattled the tailpipe against the gas-tank bracket. "That's the noise," the customer said. "It sounds as if it's up here in front."

"Afraid not," the mechanic said mildly. "It's here—this tailpipe is loose. Guess you and everyone else forgot just one little fact. Most car sounds are hard to locate because they telegraph from one area to another."

To me, this seemed a fine thing to know. So I followed the mechanic around for the next hour or so. Here are some things he told me:

• Don't think a rattle or squeak isn't dangerous just because you've gotten used to it. If the noise comes from worn steering parts, for example, neglecting it may be inviting an accident.

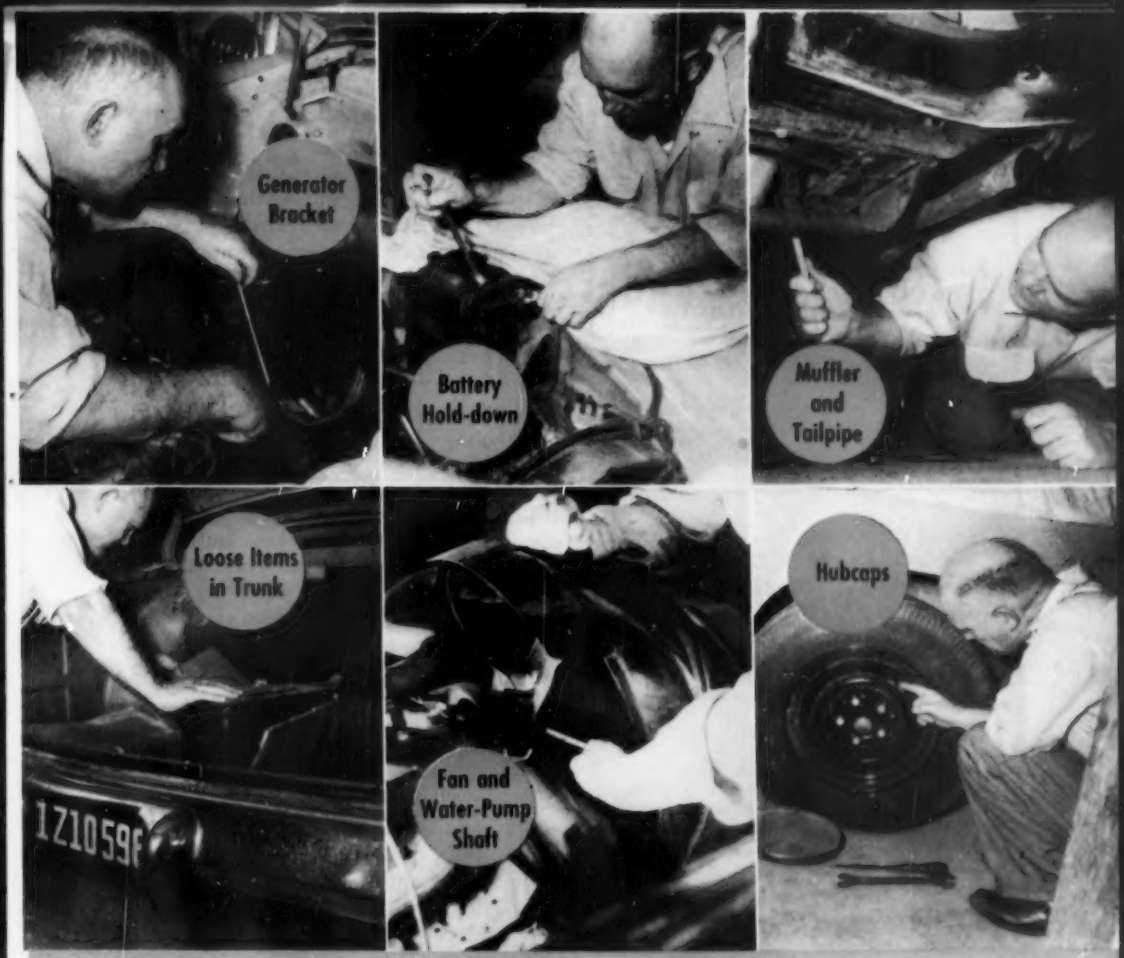


8 Places to Look

• Unusual noises in your car should not be disregarded. It is not difficult for anyone to determine that a remote-sounding, metallic knock heard at evenly spaced intervals originates in the power plant or driven units. If such a noise is heard, the water and oil should be checked immediately. If your water and oil are okay or the noise persists after filling, the car should be headed for the nearest garage.

• Even if you have no squeaks and rattles, it will pay you to check thoroughly at regular intervals for any looseness or undue wear.

Body noises. These are frequent and usually easy to locate. Thumping noises and rattles often originate in doors and window-lift mechanisms. Check for loose



for Disturbing Car Noises

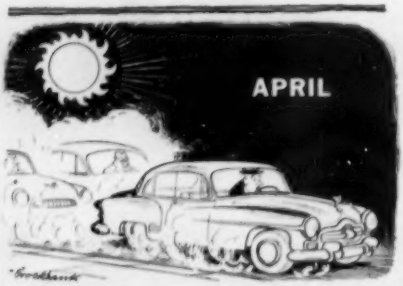
hinges and missing door bumpers. If jingling noises are noticed, check the glove-compartment lid and ash trays. Or there may be a loose wrench or forgotten metal object under one of the seats. If the noise sounds more remote, search the luggage compartment, giving special attention to the spare-tire mounting bracket and any loose equipment that may be rattling around.

Engine noises. Raise the hood and begin at the front to check engine accessories for rattles or unusual noise. Test the blades of the fan and then the belt. A V belt should not be too tight, or excessive wear will result. But a belt that is too loose will cause a squeak or rattle when the engine is accelerated rapidly. Engine dustpans, heater connections, pump and distributor shafts and air-cleaner components are frequent sources of strange noises.

Check pulleys, all mounting brackets, the throttle linkage, engine-mounting bolts and the gear-shifting mechanism for undue looseness. A check of this kind on one car disclosed that all the cap screws holding the fuel pump to the engine block were loose and one was missing. A few more miles without attention would have resulted in a stalled engine and perhaps a tow and costly repairs. Be sure to tighten the vacuum-pump housing and carburetor-flange cap screws to avoid starting difficulties and road trouble. Check bolts and brackets on the

ALMANAC
FOR MOTORISTS

Pithy proverbs, provident counsel and omens and portents of interest to horseless-carriage operators.



▶▶**These are the days** when plenty of unhappy cars, caught in heavy traffic with easy-boiling antifreeze, give excellent imitations of Yellowstone's Old Faithful. Moral: cooling systems will really thrive on just a *little* attention.

▶▶**Now that the weather** is growing more amiable, you might check the throttle arm on your carburetor to see if there is an adjustable acceleration-pump link. If so, put it in the warm-weather position. The old boat will be a bit perkier.

▶▶**Wheeling along** at 60 some fine spring morning, Absent-Minded Abner is very likely to pop open the floor ventilator for the first time since way last October. Old Abner sure deserves what he gets: two eyefuls of dirt and grit.

▶▶**Two things to watch** next time you replace spark plugs: be certain the threads are engaged right before you touch a wrench, and look for grit under the gasket. Forgetting can make trouble.

▶▶**Don't jeer** at a woman's catch-all handbag without looking over your glove compartment. If it has no old envelopes, burned-out bulbs, stale tobacco and partly used lollipops, take a bow.

generator and starter and also on the storage-battery carrier.

Chassis noises. Get your car on a lift if possible, and begin with the front bumper, license-plate bracket, gravel apron and shock absorbers. Examine radiator-mounting bolts for undue looseness, and then go over the entire steering gear, making sure that all nuts are tight and fitted with cotter pins.

Run your hands along frame channels and engine pans for forgotten tools.

Examine the transmission supports, clutch and brake-pedal linkage. Clevis lock nuts should be tight and fitted with the proper size cotter pins. All modern cars have hydraulic brakes, but some have mechanical-linkage systems and equalizers that require attention. Evidence of brake-fluid leakage should be thoroughly investigated.

Strange, hard-to-locate noises often originate in the muffler or connecting pipes. Remember that shaky mufflers frequently leak and may fill a car with deadly, odorless carbon monoxide gas.

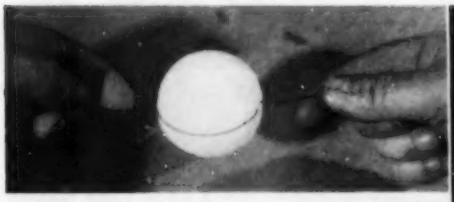
Play in the drive shaft. Ascertain the condition of your car's universal joints by checking the amount of play in the drive shaft. The expert often checks up-and-down motion by using an automobile jack under the drive shaft at the universal joint. There is always a certain amount of free rotation, but undue up-and-down movement may indicate a faulty universal joint that would certainly be the cause of a hard-to-find clanking noise.

Next, tighten body bolts, gas-tank support brackets, rear-bumper and license-plate-bracket bolts. Don't neglect differential and drive-shaft stud nuts and cap screws. All wheels should be given attention. Strange as it may seem, the hubcaps on modern cars are sometimes the source of that elusive squeak or rattle. Examine their flanges for shiny areas which may be an indication of movement resulting in noise. Check fender bolts and the gas-tank hinged cover for looseness.

Work? It sure is—but you'll love that silence! END

Going Fishing?

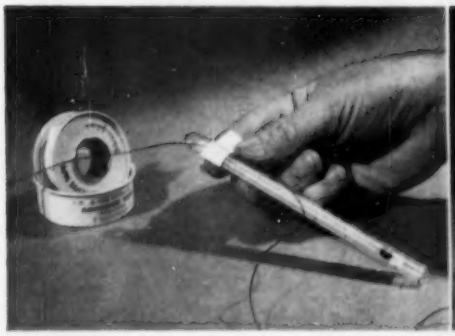
Simple tackle improvements may help you land the big ones.



PLASTIC FOAM BOBBER is sensitive to the slightest tug on the line. This foam has recently become popular for decorative uses. A Christmas-tree "snowball" made of the foam can be quickly threaded on your line.

TO AVOID SOILING YOUR POCKET when delving for a knife with wet hands, slip the clasp of a leader over a blade and close it. Drop the knife into your pocket with the leader outside.

YOU CAN WATERPROOF A LINE by spraying it with a silicone compound sold for treatment of clothing and shoes. Use the spray can after winding the line loosely on a mailing tube.



CHECKING WATER TEMPERATURE at different levels is one way some fishermen locate the best fishing spots. A glass-enclosed photo thermometer is good for this. Attach it to the line with waterproof adhesive tape.

TO COLOR A LEADER, soak it in a food color. Use a single color, or mix several as desired. Dilute with water for a gut leader, with denatured alcohol for a plastic leader. Wipe the leader dry when it has the desired tint.

8 Boating Tips

CHEESECLOTH dipped in rust-resistant paint will cover all surfaces between links in a chain for a thorough coating. Take off any old rust first with rust remover; then rinse chain.

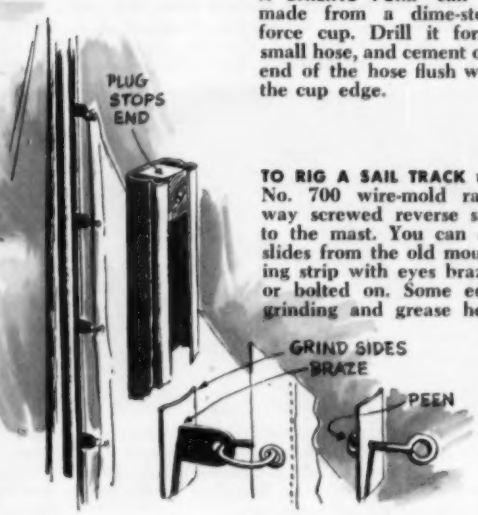
FOR A BACK-YARD TEST of your outboard's performance, fill a strong, clean ash can with water and mount the motor on the rim.

A LARGE PLASTIC CUP of the dime-store variety is useful in bailing. It won't scratch paint and is flexible enough to scoop up water in the corners.

A RUBBER STAIR TREAD folded and tacked over the transom will help absorb outboard vibration and keep the bracket from gouging the wood.

A BAILING PUMP can be made from a dime-store force cup. Drill it for a small hose, and cement one end of the hose flush with the cup edge.

WOOD PLUGS for holes over countersunk fastenings will hold best if dipped in heavy paint or marine glue before being driven in. Putty used as a filler sticks if you dab the holes with paint.



TO RIG A SAIL TRACK use No. 700 wire-mold raceway screwed reverse side to the mast. You can cut slides from the old mounting strip with eyes brazed or bolted on. Some edge grinding and grease help.

A SPARE STARTER ROPE may save you from rowing back to port. Keep it coiled under the seat.

He Runs a Shipyard for Amateurs

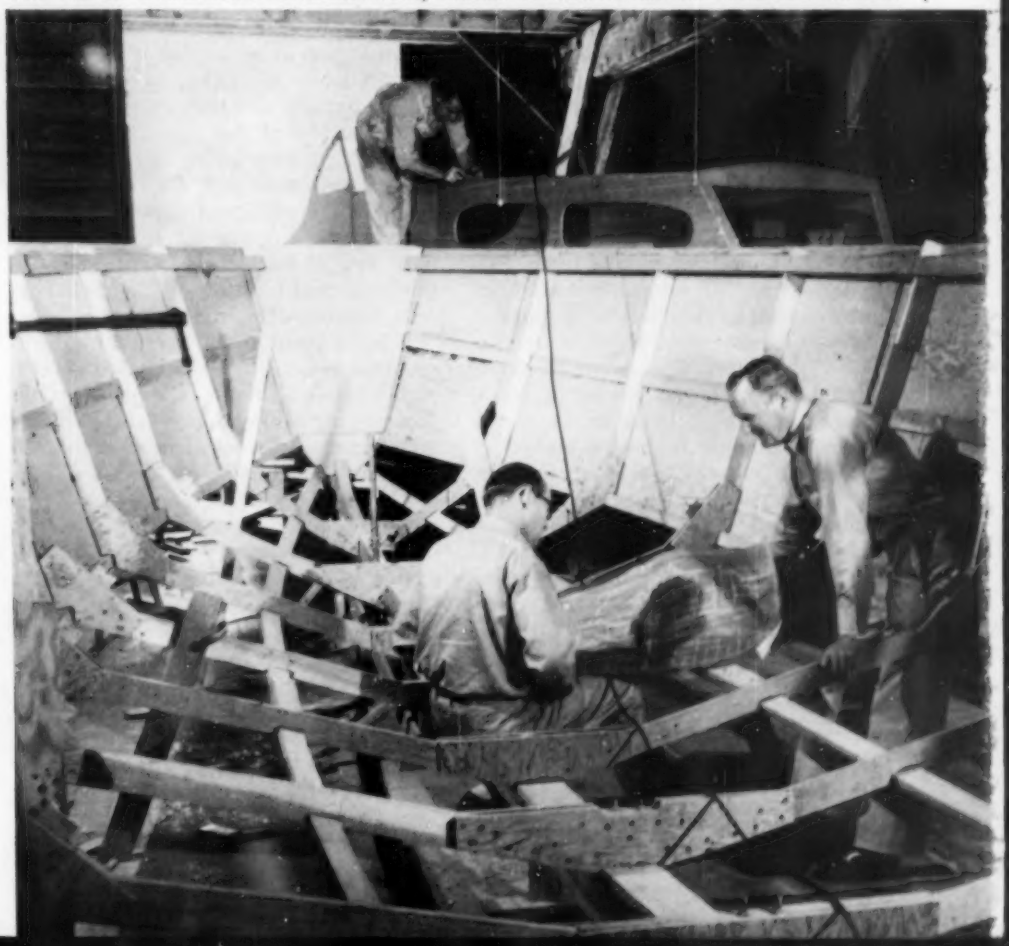
For $1 an hour, Sam Thurston gives you space, tools and expert advice. Result: greenhorns are now building their own express cruisers.

By Paul Corey and Darrell Huff

THE Trident Shipyard on San Francisco Bay is a place where a man who wants to build himself a boat can do it. The customer supplies the urge, the muscle and the money. Trident provides the tools, the space and the experience.

As proprietor, Sam Thurston now has a going concern that has, for him, the elements of a dream job: he gets paid for something that's fun to do. Being the highly professional mentor of some highly inexperienced builders involves an-

This will be a twin-screw 28-footer. Here, builder Mortimore asks Sam Thurston's advice.



MAIN DOOR at Trident is big enough to take the sting out of classic wisecracks about amateurs' building craft too large to get out to water.

NEW CUSTOMERS discuss with Thurston, right, the kind of boat they'd like to tackle. Boatyard has variety of blueprints builders can borrow.

other element of a dream job, too: it keeps him on his toes.

Space to spare. In a tough waterfront district, you'll find Trident humming under Sam Thurston's energetic supervision. The yard includes a loft, drafting room and office. The heart of the place is an impressively big room that contains seven boats that are well along, and another starting. One man is bandsawing an oak rib, another is running stock through a jointer, and out back there's the whir of electric drills.

"Not many builders around now," Sam explains. "They all have jobs, and must sandwich boat work into their spare time.

"None of them ever tackled so much as a water ski before. Right now we have, let's see, an orchestra leader, a postal clerk, a mechanic, a truck driver, a cop, fisherman, student, insurance broker."

Plugging 'em up. Thurston points out their boats. The gleaming 24-footer, freshly coated with glass fiber and plastic, belongs to police officer Cornelius Murphy. The 28-foot twin-screw cabin cruiser belongs to Teddy Yap, an orchestra leader, and he's working on it now, plugging screw holes instead of songs. From the remarkable number of plugs, you can see that driving fastenings is a big part of boatbuilding.

When you say as much, a head emerges from another 28-footer nearby. "Over a hundred bucks of fastenings in this one already," says its owner. "Seventeen gross of screws so far, would you believe it?"

"That's Omer Mortimore," Sam mentions as you walk off. "He's a mechanic. Thinking of living on his boat. Figures he can take it to Alaska, work there during the season, and then cruise down the coast the rest of the year."

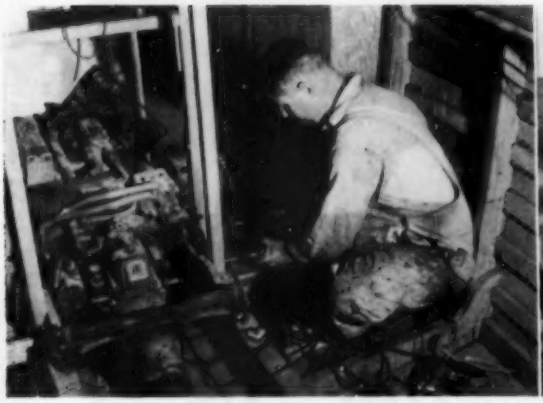
The big fellow installing an engine in the cabin cruiser near the door is Don Grone. He grew up with boats and now, an electrical-engineering student, works part time at Trident. He helped lay out the place and built the 10 identical one-man benches that line the walls.

What's provided. Each builder gets his own bench, fitted out with chisels, planes, saws and vise. He also gets his own electric drill with power screwdriver attachment and a set of those combined bits that simultaneously make a lead hole and a counterbore for a screw.

Besides the tools loaned to a builder individually, Trident has others for collective use. There's a radial saw, a big bandsaw, portable saw, Shopsmith, steam box, sanders, an air compressor, a small crane, and enough clamps to sink a boat.

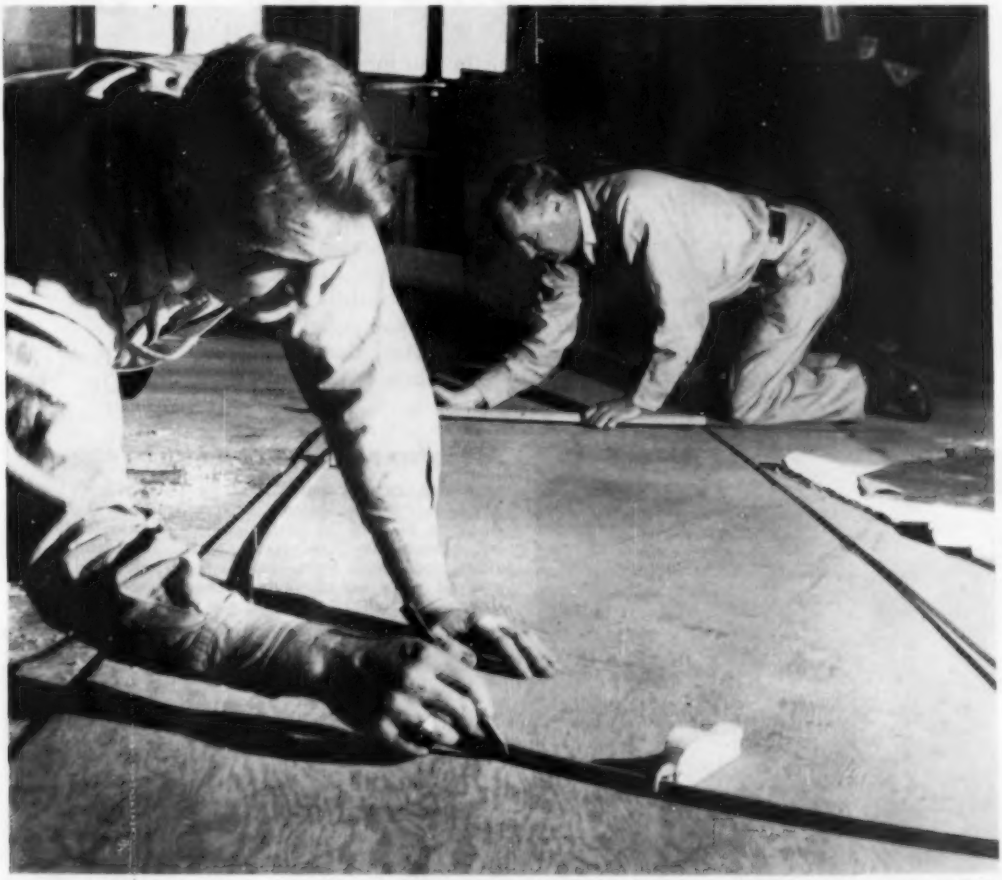
Expert counsel. Sam helps each new patron balance ambition against cost, size against time, a kit boat against one built from scratch. He helps you choose

[*Continued on page 242*]



INSTALLING A POWER PLANT isn't the headache with Trident's facilities that it can be in backyard or basement sites for boatbuilding.

BENCH at which police officer Cornelius Murphy is planing a piece is one of those provided each customer. Tools shown come with it.



LOFTING sets out curved cutting lines and rib locations on the plywood sheets. Here Don Grone, left, helps Thurston mark out a cut. With this done for them, builders get started fast.

How to Use TV Lighting

A simple setup using three small bulbs lets you stage your own "studio" portraits the TV way.

By George H. Waltz Jr.
Photos by W. W. Morris

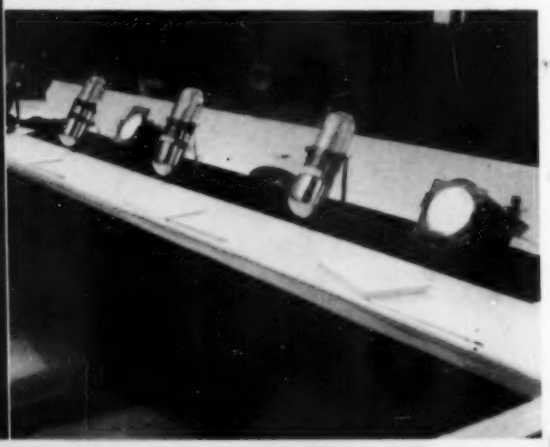
"GEE," I thought, as I watched my TV set, "if I could only take pictures like that." Every close-up was a perfectly lighted portrait, even with actors all over the stage and the action hopping around hotter than a double-play ball in the infield. It must take a mass of special lights and fancy equipment.

That was what I thought until I got a behind-the-screen look with PSM photographer Bill Morris. What we found out may surprise you. It sure did me.

If you've watched "What's My Line?" you've probably been impressed by the pleasant portraitlike lighting that's used in shots of the panel and of John Daly, the M.C. And that's just about what it is—good three-point portrait lighting.

Many small setups add up to one

LIGHTING LOOKS COMPLICATED for TV's "What's My Line?" but really isn't. As you can see in the diagram, each of the participants is illuminated by at least two "key" lights, at the front and sides, and a back light—just as if an individual portrait were being made of each one. This three-point lighting—as you can see in photos



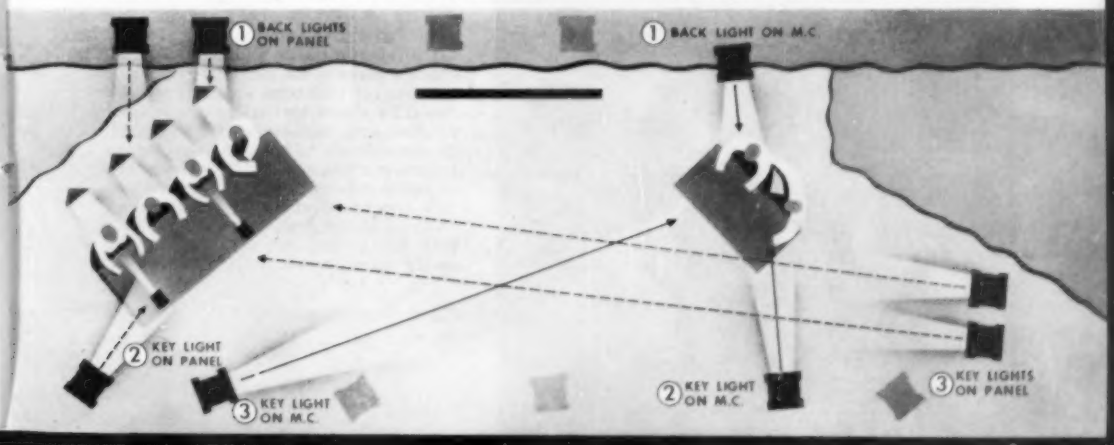
for Your Home Photos

But you wouldn't believe it at first. When I saw the lights that flooded the stage, they all seemed to point in different directions. Then Bill started to show me that it wasn't as complicated as it looked. It was just the old principle of lighting a subject from three points, only it was done in multiple.

As you can see in the diagram, *each one* of the six principals in the show—Dorothy Kilgallen, Fred Allen, Arlene Francis, Bennett Cerf, John Daly, and the mystery guest—is lighted by at least

big one—but it's the same simple system you can use at home

on top, made just before air time—eliminates deep shadows, highlights each panelist's hair, and separates him or her from the background. The "key" lights are mounted on overhead pipes in front of the stage. Back lights for the panel are mounted above the backdrop behind it. General back lighting for John Daly and the stage comes from overhead lights at the rear. Spotlights on the panel's desk (below left) provide soft underlighting for Dorothy Kilgallen and Arlene Francis. In effect, the multiple lighting is used in such a way that just about any spot on the stage gets good three-point portrait illumination, the kind pro photographers use.



two forward "key" lights and a back light.

The lighting is so rigged that no matter where one moves on the set he or she is being lighted by some one of the three-point lighting systems.

When we visited the busy sets of "Studio One" we discovered again why shots of TV actors look so much like portraits. That's just what they are. Despite the dozens of lights used, the center of action is illuminated by two "key" lights and one or more back lights.

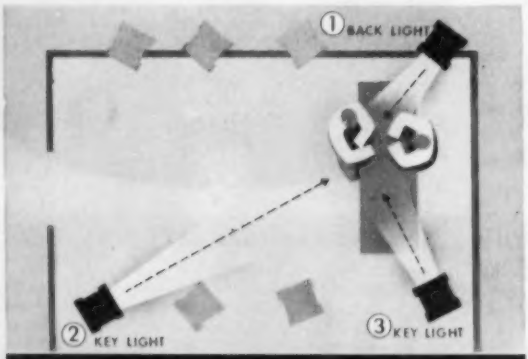
TV Lighting Has Extra Functions

Other lights are used for filling in, to create moods or dramatic light-and-shadow effects, and—here's one you don't have to worry about at home—to kill shadows cast by the long mike booms. Still, the basic lighting comes from the same three points that portrait photographers have been using for years—one light near the camera, one at the opposite side of the set, and a third, high and to the rear, serving as a back light.

I was in for another surprise, too. On both shows we visited, the sets, on the whole, were underlighted, not overlighted. In TV, it's the balancing of light, not the quantity, that counts, and the same holds true for home photo lighting. Overlighting not only puts an added strain on your subject, but it makes it harder to avoid deep shadows, unnaturalness and excessive contrast.

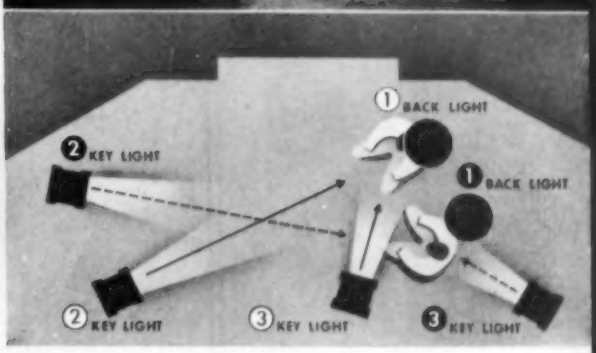
You can get the same TV portrait effect in your home photos with just these three lights—two lamps of the mushroom type with built-in reflectors and an ordinary open flood in a metal reflector. Use the open flood and one of the mushroom lamps as your side "key" lights, keeping the open flood closest to your camera. Place the second mushroom lamp high and behind your subject, aimed down at the head and shoulders.

Experiment with the exact placing of your lights to get the effect you want—but stick to the basic three-point principle. What it does for television, it can do for you.



Even action-packed scenes are lighted like portraits

PLENTY OF ACTION went on in this tense scene from Westinghouse's "Studio One," yet the basic illumination came from a three-point lighting system, as shown in the diagram at upper left. Because TV shows consist of many dramatic close-ups, studio experts must rely on three-point lighting to give actors' faces a portrait quality. Only a few other lights are added for fill-in, to provide special effects, or to kill the shadows cast by the long microphone booms that ride in and out overhead to pick up the actors' voices.

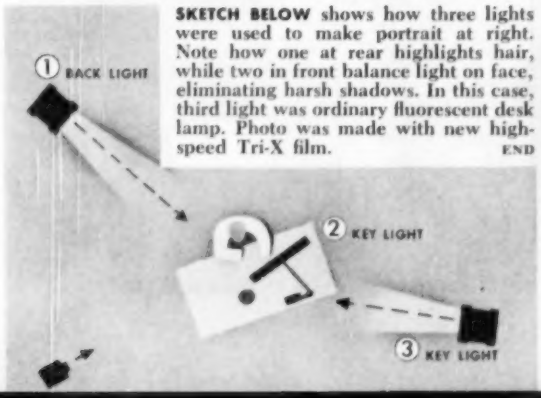


Three-point lighting need not be bright, as these shots show

LOW-KEY LIGHTING was used for this police-station scene in "Studio One," yet, as in other scenes, the main illumination was provided by a three-point setup. Two "key" lights were placed in front and at the sides, while two hanging lamps—simply 300-watt floods in reflectors—provided top and back lighting. Additional dramatic lighting for the actor on the right was obtained with a small spotlight off to the left. Photos at left above show how lighting looked on home TV screens. They were shot at f/3.5 and 1/25 sec.

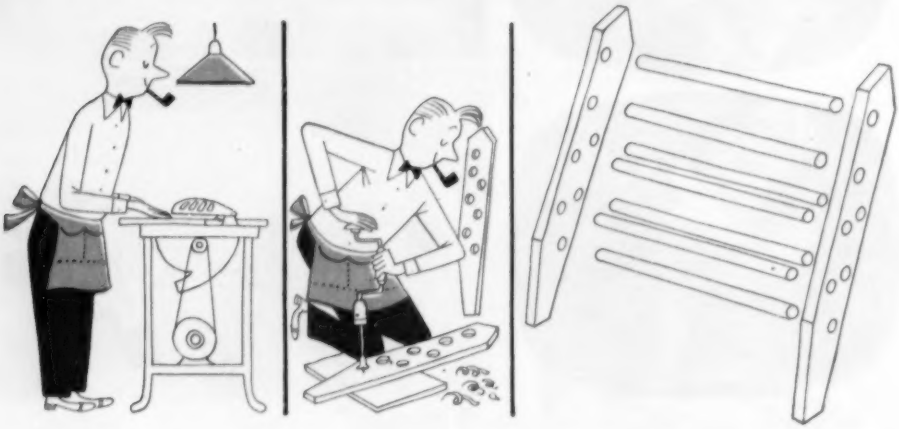
Here's how you can make home portraits

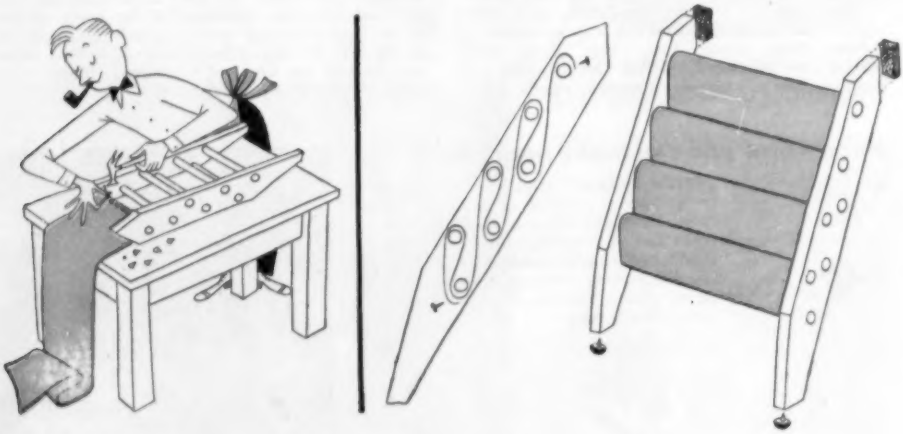
SKETCH BELOW shows how three lights were used to make portrait at right. Note how one at rear highlights hair, while two in front balance light on face, eliminating harsh shadows. In this case, third light was ordinary fluorescent desk lamp. Photo was made with new high-speed Tri-X film. END

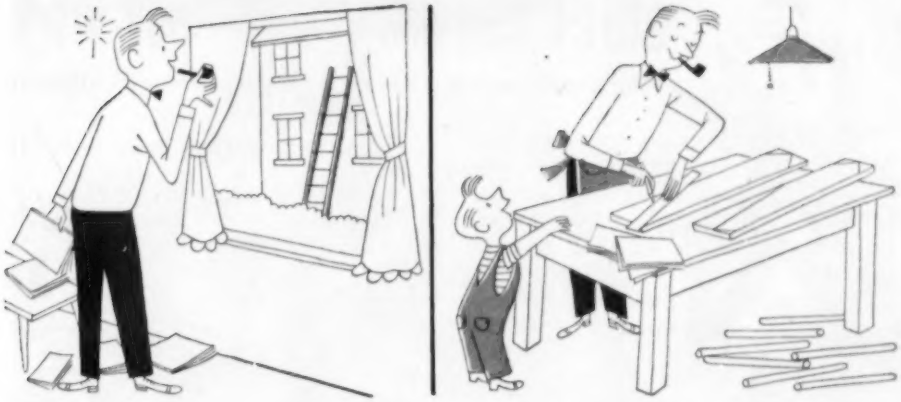


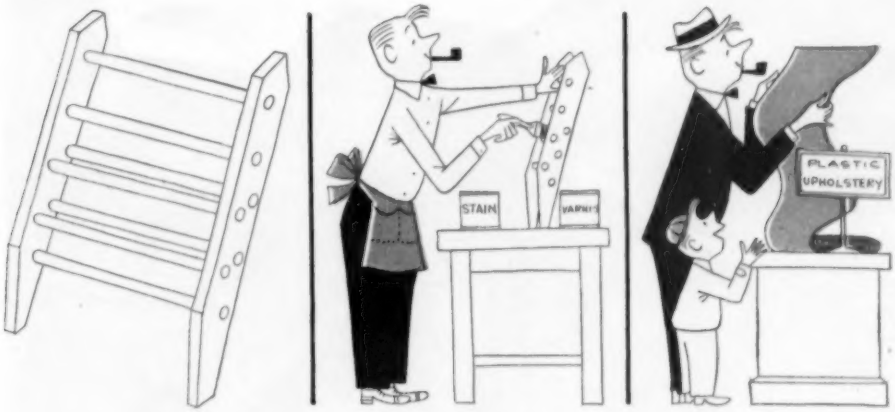
By Roy Doty and Norm Jacky

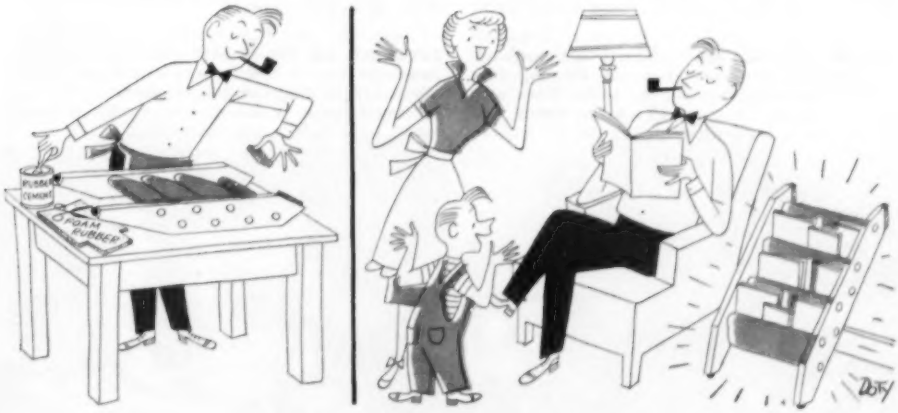
Wordless Workshop











Next Month: A clothespin holder that slides on the line

PLASTIC TILES provide a durable, damage-free top for our table. They completely hide the inexpensive plywood that was used underneath. You could do the same job with ceramic tiles, but the plastic are considerably cheaper and come in brighter colors.

WE LAID OUT THE LEGS FIRST, setting them back 6" from the edge so that the slanting tips wouldn't protrude beyond the table. We chose the easy screw-on type, 15" high, which you can get from mail-order houses for $1 apiece.

BUTTERING ON THE MASTIC was easy with this saw-tooth trowel that insures a uniform depth. Special tile-setting cement, available at tile and hardware stores, is slow-drying so you can cover entire table before you start tiling.

How We Built a Corner Table

Plastic tiles on a plywood base gave us that different touch.

By Ron and Marion Anderson

WE WANTED a corner table for our living room that was different, one that would really add life and color to the room. But after searching the furniture stores, we decided that originality came too high—especially when it was someone else's originality.

So we decided to build our own table. It had to be strikingly different, easily made, inexpensive and, of course, "look like a million dollars."

We found the answers to all these in a small square of ¾″ plywood, four metal legs and 49 pieces of plastic wall tile. The cost came to just under $10.

The tile was the fancy icing on a plain cake that made the whole thing possible. It has a smooth, high-gloss, stainproof surface that's ideal for table tops and comes in a wide variety of vivid colors. The 4¼″ size cost six cents apiece, and the narrow strips we used to edge the table cost only three cents, so you can buy quite a few without denting the budget.

Laying out the pattern. We wanted a table about 30″ square to match the depth of our sofa. By laying out seven tiles in each direction, we found that they added up to exactly 29¾″.

By making the table to fit the tiles, you save the work of cutting odd-size pieces and come out with a much neater job. If the size doesn't work out for you as luckily as it did for us, you can put one or two rows of the narrow tiles into your design, which would let you get within an inch or so of the desired dimensions.

The most fun was planning the pattern. We spent several evenings with reams of graph paper, filling in the squares with colored pencils to help us visualize how the designs would look. The one we finally decided on took 26 white tiles, 21 black, and one red and one chartreuse for a real dash of color.

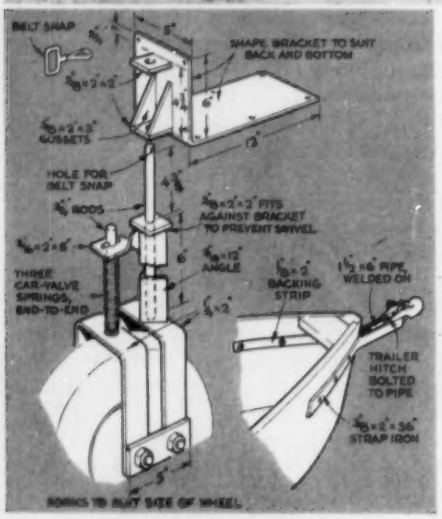
Setting the tiles. It is a simple matter to spread a special tile-setting mastic over the plywood, plop the tiles in the goop, and press them tightly together (you don't leave any gaps between joints as you do with ceramic tile).

The important thing is to make sure that the cement is spread evenly over the entire surface. The saw-toothed trowel will help you a lot on this. Some of the mastic may ooze up between the cracks, but you can wipe it off with tile cleaner.

The mastic is available only in quart cans (about $1.25), which is a shame since you need only a little. So now we're trying to figure out where we could use another table, it looks so good. END

WE STARTED AT THE EDGES, laying tiles around all four sides, then working toward middle. This saves centering the pattern, but plywood must be accurately cut to make the tiles fit. Press tiles in gently or mastic may ooze out.

NARROW TILES, called feature strips, are just the right size to cover the ¾″ edge without trimming. We taped them on during drying so they wouldn't slip or warp. After a week to let cement set, our table was complete.



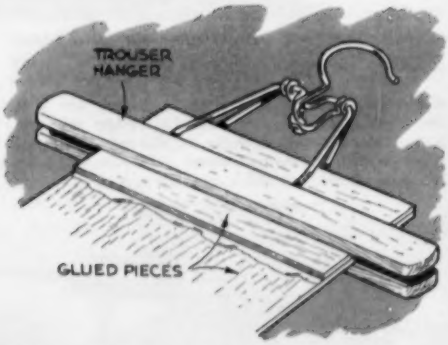
You Don't Need a Trailer if You Put Wheels on a Boat

If your boat has a sturdy keel and the distance to water isn't far, you can save investing in a trailer by putting wheels on the craft itself. But don't try it on a boat with a light frame. And check your state laws; you may need a trailer license.

Rear brackets shaped to the contour are bolted to the transom and screwed to the bottom. A trailer-hitch holder is bolted on the front. Calk all bolts.

Wheels fit the brackets like casters and are held by belt snaps. Swiveling is prevented by a plate under each bracket. All joints are welded.

When you reach the water, remove the belt snaps, unhook the trailer hitch, and push off.—*Arvid Anderson, Racine, Wis.*

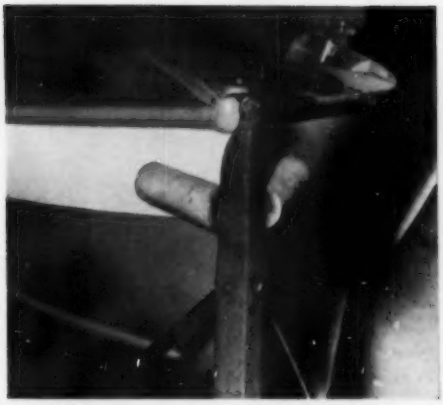


Hanger Grips Small Parts

If you need an extra clamp for a light gluing job, try putting a trouser hanger to work. You'll find that it will hold small parts securely while the glue sets.

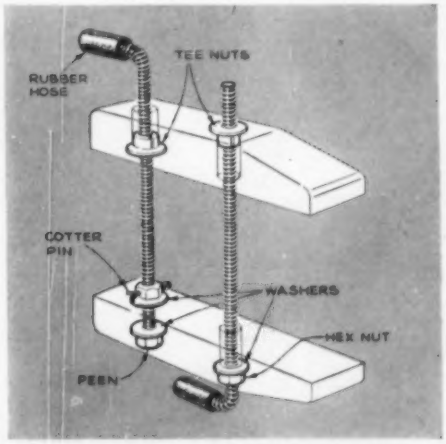
Saw Cuts Hold Drill on Tubing

The bit won't slip as you drill tubing if you mark the hole center with a hacksawed cross. Start the bit where the lines meet.—*Hugh Lineback, Stillwater, Okla.*



Wringer Rollers Protect Boat

Two rubber wringer rollers, cut in half and their shafts welded to a length of angle girder, will protect the bow of a boat carried on a trailer. You can anchor the boat with a hook bolt through the bow eye.—*Grover Brinkman, Okawville, Ill.*



Want to Make Gluing Clamps?

You can make a set of husky gluing clamps in an evening, using 5/16″ threaded rods and Tee Nuts, both available at most hardware stores. Shape the clamp bars to any desired size from hardwood. Drill 7/16″ holes through the upper bar to take the nuts, and 11/32″ holes in the lower bar for the rods.

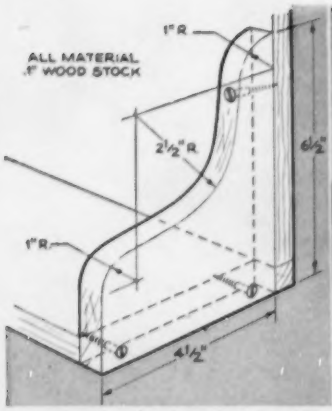
Heat and bend the ends of the rods to form handles, and arrange the nuts and washers as shown in the drawing.—*Randal B. Hathway, Thomaston, Conn.*

Barrow Makes Portable Grill

Whenever we decide to have a picnic in the back yard, we use my metal mortar barrow to build the fire in. With a piece of metal lath over the top, it makes a fine grill that can be rolled anywhere about the yard. When the picnic's over, we just wheel the barrow away and dump out the ashes.—*R. M. Woodbury, Natick, Mass.*

Pipe Braces Star-Drill Shank

A piece of pipe will keep hammer blows from bending the long shank of a small star drill. You can wedge the pipe on the shank with wood for firm support, and knock it off again when the hole grows deep.—*Michael Ligocki, Gary, Ind.*



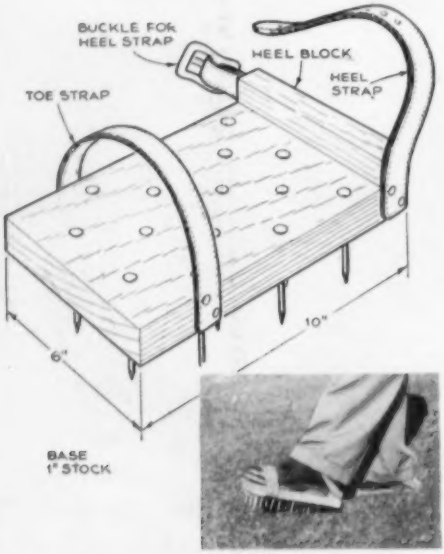
Household Electrical Needs Kept Handy on Fuse-Box Shelf

To STORE a convenient supply of fuses and other household electrical equipment, you can install a shelf on the panel on which the fuse boxes are mounted. Notch the ends of a board for brackets, leaving a ledge at back to go under the bottom of the panel. Assemble the parts and attach with screws. —*Michael Ligocki, Gary, Ind.*

Hose Stored for Use on Fire

EMERGENCY fire protection can be given to your home by storing a garden hose on a reel in the basement stair well. Kept attached to the water supply, it is ready for instant use. When you need it for outdoor sprinkling, it is easily carried out to the garden or yard on the reel.

A 50′ hose should be sufficient for a ranch-type house, 75′ or 100′ for one of two stories. For best protection install a water outlet near the stair well, and also keep extinguishers in strategic spots elsewhere in the house.



Lawn Aerators Fit on Shoes

YOU can aerate your lawn by walking around on these clogs. The holes let fertilizer or water reach the roots.

Eight-penny nails were driven through a piece of stock 1″ by 6″ by 10″. Then ¼″ plywood was laid over to cover the nailheads. The heel block is 1″ scrap. The straps can be leather or any strong material.—*R. V. Stewart, Cleveland.*

It's fun to have a garden pool

Here's a project to wade into—a back-yard pond. Even a tiny one can add a lot to outdoor living.

By Darrell Huff

SPARKLING water will often turn an ordinary back yard into a charming recreation spot. A simple but carefully planned hole in the lawn can be used in three ways: As a wading pool for the children. Or as a decorative lily pond or fish pool. Or as a perfect sand box for the children.

The informal wading pool in the photo above

Four steps to a wading pool

1 USE ROPE OR HOSE to lay out free shape. Then dig a spoon-shaped depression about 2′ deep, with sides sloping 45° and the bottom slanting toward a drain point. Chop out steps at one point to help tots enter. Install 1¼″ pipe and an elbow for the drain. Close the elbow with a plug so that dirt and concrete won't get in.

2 POUR MIXED CONCRETE, which should be dry enough to pack and stay on the shoulder slope. Trowel it to cover at least 4″ deep (6″ in freezing climates), leaving surface rough to bond well to next coat. Cover with wet burlap.

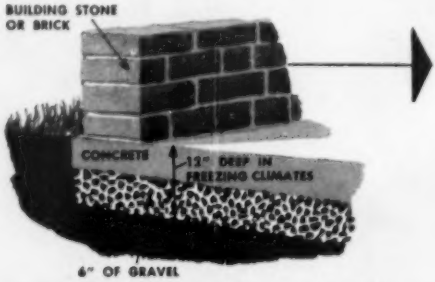
3 PLASTER COAT of sand - and - cement mortar is applied after the rough concrete has set no more than a day. Mix two parts of plaster sand to one of cement, with enough water to make it spread easily. Keep first surface wet as you trowel it on.

4 FOR A WHITE POOL, mix the plaster coat of white cement and white sand, sold for mixing glass-block mortar. Cure the concrete by keeping it damp for a week. Then, to paint it, treat with acid as described in the text, let dry, and apply rubber-base swimming-pool paint. It's easier if a helper picks up loose matter ahead of you with a vacuum cleaner.

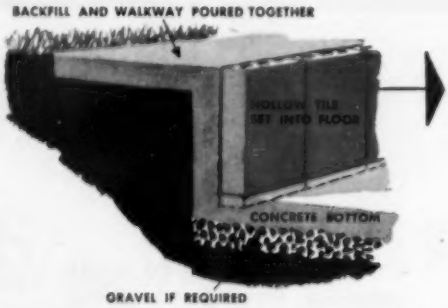
(and under construction at left) was built for less than $15, and with an equally modest outlay in time and effort.

For purely decorative purposes, a pool need hold only a few inches of water. One for fish and plants should be from a foot to two feet deep, but it can be rough and rustic. A wading pool should be from one to 1½ feet deep, with smooth sides to protect small feet and make it easy to clean.

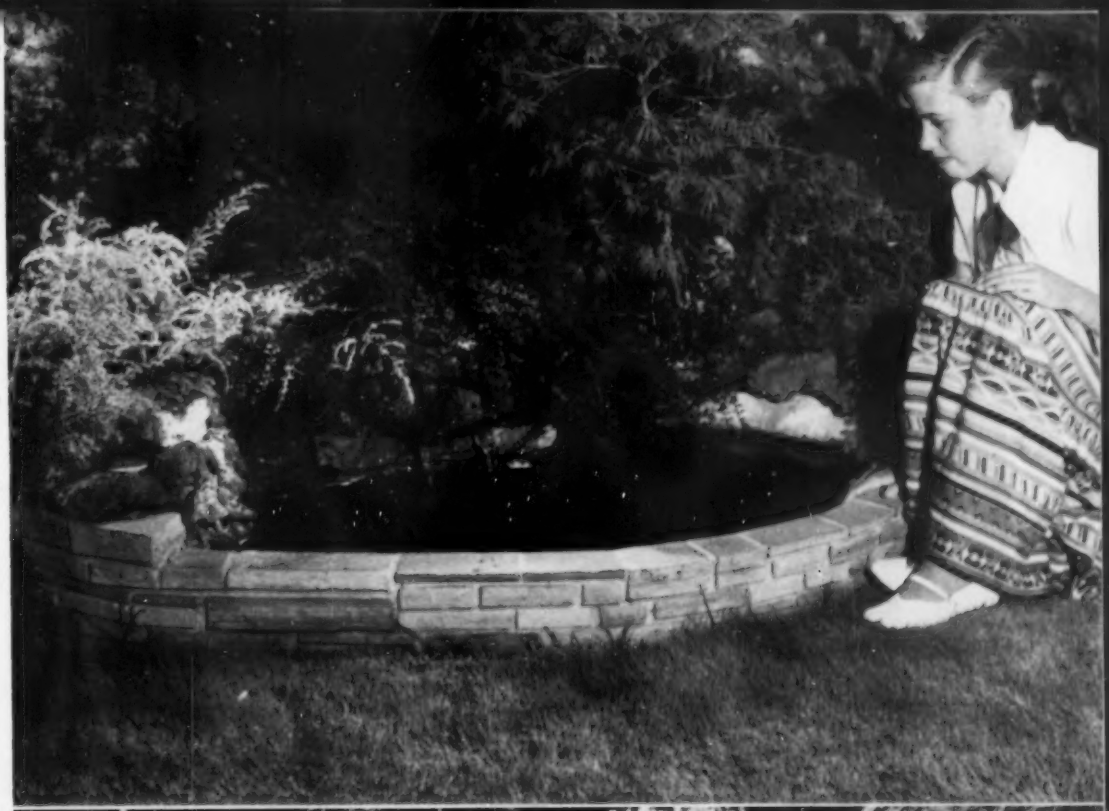
To lay out straight-sided shapes, drive stakes at the corners and run string between them. You can mark out a right-angle corner accurately by using the



ABOVE-GROUND POOL can be made by laying up brick or stone walls on a concrete slab. Excavate deeply enough for a 6″ layer of gravel beneath slab in cold areas. Trowel 4″ to 6″ of concrete smooth and cure it by keeping it damp a few days. Use mortar to build the walls, just as you would for a house.



HOLLOW TILE can be used to make a big wading pool like this with a minimum of effort. Dig a straight-sided excavation 2″ deeper than length of the tile units and 4″ bigger all around than the pool is to be. Mark out and dig the walkway 4″ deep. Pour the pool floor and stick the tile in, well inside the excavation walls. Trowel smooth; then let the floor cure for several days. Finally, backfill with concrete and at the same time pour concrete for the walk.



3-4-5-formula shown in drawing at right.

To mark out a circular pool, drive a stake at the proposed center, loop string over a nail in the top of the stake, and swing the string like a compass, driving stakes as you go. For a free form, just toss down a length of garden hose and rassle it around to suit your fancy.

Plan your plumbing. You can set the whole pool below ground level, or build it like a well housing, mostly above ground. If the pool is to have vertical sides, begin by excavating to approximate size. Where soil drains poorly or winters are cold, dig 6″ deeper than pool depth and fill with 4″ to 6″ of gravel or broken rock, tamped hard.

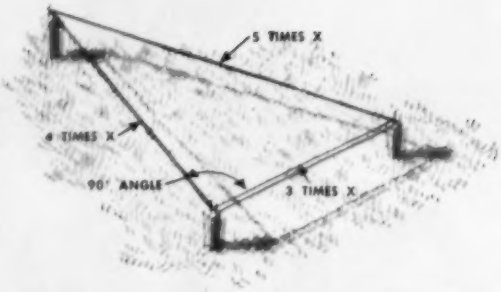
A fish pond should rarely need refilling, but a wading pool may have to be cleaned out every day during the hot season. A water-supply line saves the trouble of handling a hose. But be sure that its opening is well above the highest level at which water can stand in the pool. Having the opening below the surface might permit contaminated water to be drawn back into the line.

Draining is simple when the surrounding ground is lower than the floor of the pool. You need only install a drain and enough pipe to lead waste water wherever you wish. Or you can omit the drain and use a siphon or jet pump to lift the water over the edge of the pool.

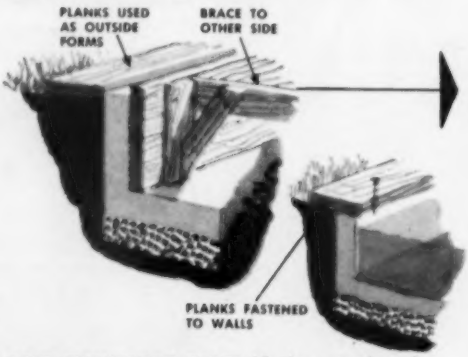
But if the pool is in a low spot, you must either pump it out or put in a drain running to a dry well. This may be made as in the drawing.

The simplest kind of drain is a galvanized-pipe elbow set, open end upward, flush with what will be the surface of the pool floor, and at its lowest point. A standard bathtub stopper can be used to plug a 1¼″ elbow. In a fish or garden pond, which will rarely be drained, you can close the elbow with a pipe plug, or provide an overflow by screwing in a suitable length of pipe. To drain the pool, all you will have to do is unscrew the pipe.

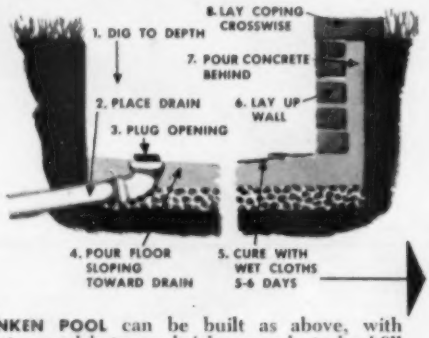
Reinforce the concrete. Ready-mixed concrete saves time and labor. For mixing your own, use a power mixer, mortar



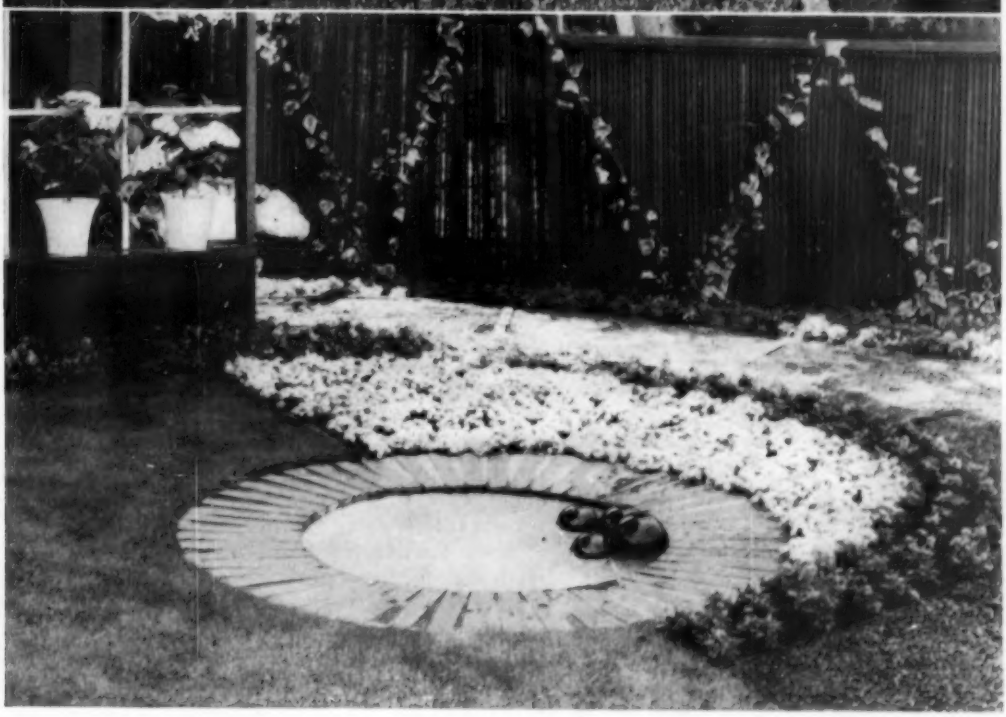
TO LAY OUT A RIGHT ANGLE, drive two stakes a distance apart you can measure as a multiple of 3 (3′, 6′ or 9′). Measure a cord the same multiple of 4 in length, and another the same multiple of 5. Attach one cord to each driven stake. Bring the free ends together. Where they meet, drive a third stake. The two shorter sides will form a 90° angle.



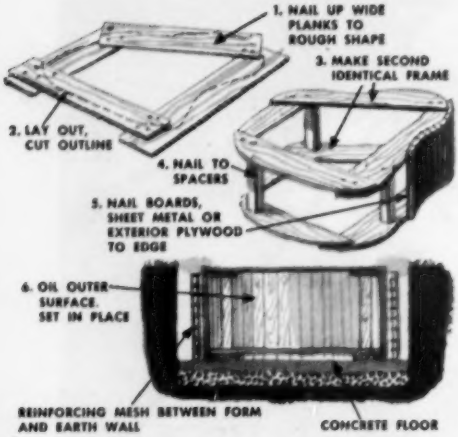
BOLD TRIANGULAR SHAPE (facing page) makes a striking wading pool, fine for a terrace location. To build one like this, cast a concrete floor. Then insert forms to pour the sides, as in the drawing above. Top with three-by-twelve planks of weather-resistant wood, anchoring them with bolts set into the concrete walls while wet, or with masonry nails.



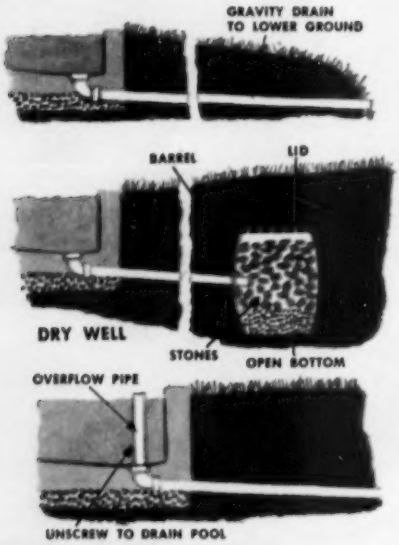
SUNKEN POOL can be built as above, with mortar used between bricks, or only to backfill behind close-laid brick. The coping of the pool at right consists of 2′ lengths of redwood two-by-fours, laid in mortar and painted white.



Building an inside form



Pool plumbing is simple



ELECTRIC PUMP drains pool independently of gravity. This one comes ready to plug in for about $16. It can be used partly or wholly submerged, taking less electricity than a 100-watt bulb. Smaller, cheaper pumps are also available. Besides draining, a pump can circulate water to a higher point to run back as a miniature fall.

box, or wheelbarrow having a metal body.

First thoroughly dry-mix one bag or other measure of Portland cement to two of clean, sharp sand and three of crushed stone or gravel. Gradually add water until the mix is uniformly moist.

Pour and spread concrete evenly to half the floor thickness desired. Then place ⅜″ reinforcing bars or heavy mesh on it and pour the other half, to a total of 4″ thickness in warm climates, 6″ where freezing occurs. For a sloping pool, that's all you do.

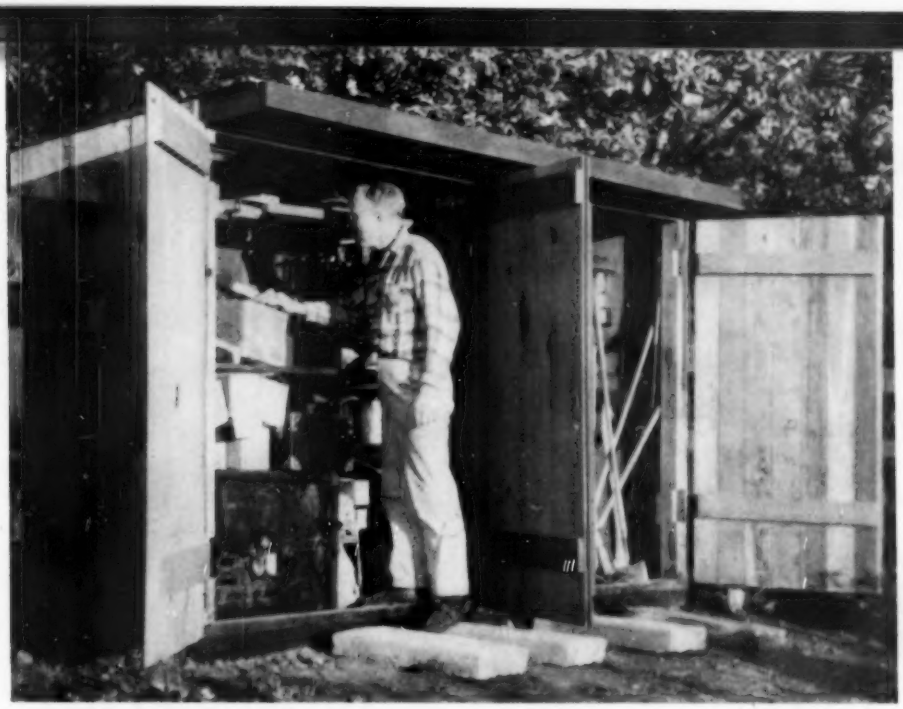
Vertical-wall pools are a bit harder. One way to make the walls is to lay up stone, brick or blocks with mortar, as for a building. Coating them inside with a rich cement mixture will make them hold water. Brick can also be laid dry, without mortar between. Lay one or two courses at a time, a few inches inside the excavation walls. Pour concrete between the brick and earth walls every other course or so. With smooth brick, this method can be used even for wading pools.

Should you want to cast concrete walls, you will need an inner form in the shape of a hollow box. For a rectangular or triangular pool, this can be built of boards. For a round, oval or free-form pool, build a top and bottom of 1″ lumber. Nail sheet iron, plywood or planks to these as in the drawing. Paint the form with oil to make it release easily.

Concrete that is allowed to dry out and set quickly will be weak. Leave forms in place two days. Cover exposed concrete with wet burlap and sprinkle it occasionally for a few days.

Add a touch of color. A wading pool is easier to keep clean, as well as prettier, if finished with a good swimming-pool paint, for this discourages the growth of algae. One rubber-base type comes in several colors.

When the concrete has thoroughly set, wash out the new pool. Then etch the surface by scrubbing it with a 10% (1:10) solution of muriatic acid. Flush again with clear water and let it dry thoroughly. Apply two coats of the paint. END



Suburban Home Ideas

A storage fence for your tools

STORAGE walls in modern homes are so shallow you don't miss the space they use. Same with this storage fence. It is just a wide place in a fence—wide enough to store outdoor tools, yet narrow enough for minimum loss of yard space.

Ideally, a storage fence should utilize the same materials as the fence. It will then look like an extension of the fence instead of a separate, conspicuous unit.

Begin with a concrete slab. Make it the size and shape you like, remembering that the longer and narrower it is the less it will jut out into the yard.

Set standard sill bolts in the concrete every 4′ while it is wet. They should stick up far enough to permit bolting on a two-by-four sill all the way around.

Nail two-by-four uprights to the sill 24″ apart except in the door space. Top off these studs with two-by-fours, and add two-by-four rafters long enough to provide a front overhang. Give the roof a slight pitch.

There's little point in using house-type double-wall construction. The logical material for walls is whatever has been used nearby—for the fence, of which it is part, or for your house.

If you make one side all doors, you'll find access easy. These can be made of boards or exterior plywood.

Interior arrangements are a personal matter, but usual requirements are plenty of shelves for paint and garden items and a compartment for large tools. You may also want a wide, low shelf for mixing chemicals and doing other garden chores under the roof.

THE SAME MATERIALS were used to build both fence and storage unit. The latter is 3′ deep with a 12″ overhang. A single sheet of corrugated aluminum 4′ wide covers roof.

Does your

By F. A. Strenge

YOU put a tight roof on your house to keep rain out. But are you sure that your walls are equally rainproof?

There's a good chance that they aren't, science has found, if the walls are conventional painted wood siding. The rain doesn't get inside the house. But it does get inside the walls. And once there, it can blister the paint and discolor your house with unsightly streaks and nail rust.

Capillary attraction is the culprit. This is the action that can make a liquid in contact with a solid flow uphill. In a home, raindrops climb *upward* under the siding.

This startling discovery was made in a new series of tests carried out at the U.S. Forest Products Laboratory, Madison, Wis., as part of a long-range study of ways to guard wood from decay and insects.

Of course, weatherboard blisters and stains that show up in the Northern states along toward spring may be caused by condensation, or ice that has

Suburban Home Ideas

home need a raincoat?

dammed up the eaves and the gutters.

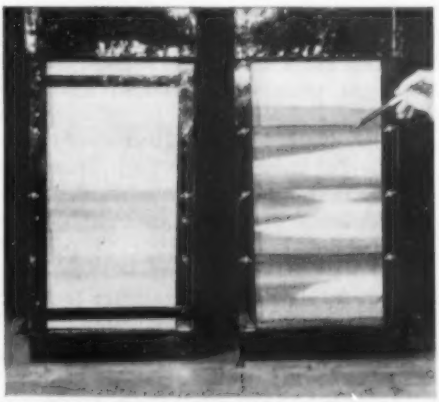
But these lines of moisture attack have been pretty well turned back by modern construction methods. Properly primed-and-sealed interior walls make vapor barriers that prevent inside warm air from getting through to cold outer walls where its moisture could condense. And adequate flashing and low-hung gutters greatly reduce the chances of water entering at the eave line.

Lap joints are the Achilles' heel. In the Madison tests, scientists exposed siding panels to running-water and high-velocity spray tests. They found that where one course of bevel siding overlapped the one below, the joints soaked up water like sponges.

That was capillary attraction at work. Even the smallest crevice between boards offered a toehold for moisture to start its upward climb.

On a newly painted house, the chances are good that the overlap is covered with a paint film. But in a year or two the film cracks open and rain water starts up. Once behind the siding it "wants out" and works back through the siding until it hits the painted surface. There it is blocked, but only until it can build up enough pressure to raise those blisters.

Some of the water that gets behind the siding may also drip out again through the same cracks that let it in; only this time it carries stains from the wood and



CONTINUOUS FLOW OF WATER over these painted panels produced dark stains on the one at right, showing that moisture had crept in at the lap joints. "Raincoat" of water-repellent preservative on its mate prevented capillary attraction, kept it unblemished.

APPLYING WATER-REPELLENT PRESERVATIVE to unpainted wood gives it a slippery surface that makes capillary attraction impossible. Brush liquid on exposed wood and into all butt and lap joints. Don't overlook the lines where old paint and wood meet.

FINAL STEP. Wipe off excess water-repellent preservative with a rag dampened with paint thinner and wait a day or two before applying new paint. If you are building a new home, have your contractor dip the siding and trim in the chemical before he puts them up.

building paper with it. Those streaky stains are the telltale signs that prove conclusively that water is getting back of your siding.

The treatment. Fortunately, the Forest Products Laboratory tests went further than just analyzing the extent of damage caused by capillary attraction. They proved that there is a simple and effective way to arm wood-sided houses against it.

The armor is water-repellent preservative, now widely sold by lumber dealers. Trade names vary. But a good water-repellent preservative should have the following ingredients, in about the amounts listed: seven to 10 percent water repellents, sometimes called "inert ingredients" on labels; five percent pentachlorophenol ("Penta"), or other chlorinated phenols; and 85 to 88 percent mineral spirits. Wood preservatives that don't contain water repellents are not effective in blocking rainwater, so be sure to buy the kind that contains them. The label should tell.

Applying the preservative. If you are building a new house, the Forest Products Laboratory recommends that you tell your contractor to soak or dip the siding—and the exterior trim, too—in a trough of water-repellent preservative. Or do it yourself. Brushing helps, although this is not as effective as dipping. If the siding is already in place, brush the water-repellent preservative on liberally, paying special attention to those overlap joints. What the chemical does here is to make the wood, just beyond those points in the paint film which may later develop cracks, too slippery for water to climb over.

If your house needs repainting because the paint has blistered and is peeling off, do the usual scraping and sanding job. Then, before applying new paint, brush the preservative into each overlap joint and into all end joints where siding boards butt together. Along window and door trim and at house corners are other butt joints that should get the treatment, too. It's also worth while to seal joints in window and door trim with water-repellent preservative, especially if the old paint has loosened.

Any excess that runs down over the paint should be wiped off with a cloth that has been wetted with a paint thinner. A day or so later you can repaint, with reasonable assurance that the new job will look shipshape for a long time to come. END

The easy way to pave a terrace

Tamping bricks or other paving material in sand gives a solid surface without a bit of cement.

TERRACES are a popular feature of modern suburban living. You can have one, too—easier than you think.

Given a reasonably level area, you can create a solid terrace without even a jigger of cement. Just set bricks, tiles, flagstones or other paving materials in sand and tamp them down. The method has been used for years to make walks.

The common brick, with dimensions around 2½″ by 4″ by 8″, is commonly set flat but may be placed on edge. It takes 450 to cover 100 square feet. Five cubic feet of sand will cover the same area to the depth of one inch.

First grade the area. A pitch of at least one inch in six feet is recommended for good drainage.

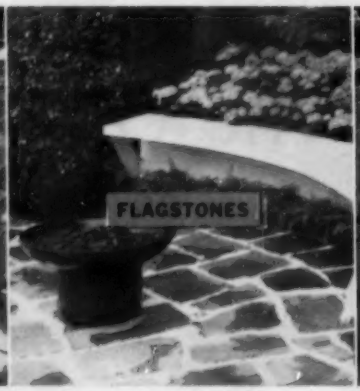
A border is needed to hold the job together. Bricks set in mortar make a fine edging. So does a ribbon of concrete. Redwood two-by-fours are a third possibility.

Laying the brick. Bricks may be laid in various patterns. A running bond, where the joints of successive courses are staggered, is easy to create. Herringbone and basket weave are other variations.

Try to lay out your terrace so there won't be any bricks to cut. Place a section of bricks experimentally to see how they will come out. If cutting is necessary, try to scrounge a brick set, the pro's tool.

After the bricks are tamped, some

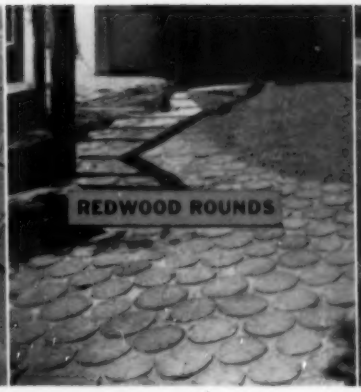
You can set your paving material in sand. Use . . .



experts sweep sand over the surface to fill the cracks. Sometimes bricks are set with a half-inch of sand between. Wedging them tightly together, however, will give a more enduring floor. A severe winter may heave a few out of place, but the damage is easily repaired.

Big 12-inch-square red-clay patio tiles may also be laid successfully in sand.

THREE PAVING METHODS are seen below—bricks in sand in the foreground, cement slabs as stepping stones and a 3" layer of crushed stone tamped between redwood header boards.



The same rules apply. One extra thing to remember: tiles vary slightly in size. So sort yours into groups of identical size and fit them together this way. Use butt joints.

Sawing a terrace. Rounds or end-grain blocks of redwood, cypress or cedar set in sand make an attractive path or terrace. Rounds are slices of tree trunk several inches thick and from four inches to over four feet in diameter. Blocks are four to eight inches square, cut from beams or railroad ties.

A space of one inch is suggested between blocks. Fill the spaces with sand, and tamp down. Spaces between rounds may be filled with soil, and grass or moss encouraged to grow.

Blocks and rounds, of course, are susceptible to decay and insects. A good preservative should be used to treat them. Some preservatives, like pentachlorophenol, are good for wood but kill plants. A better choice might be zinc naphthenate, which doesn't hurt grass or flowers.

Cementing the easy way. There's an interesting variation on the sand-bed technique. Mix dry cement with the sand, about a sackful per 100 square feet. Then set the bricks and wet them down with a fine spray. This can be done with tile, too, but leave open ¾-inch joints and fill with mortar.

Aggregates such as tanbark, gravel, crushed brick, decomposed granite or red rock, the latter a roofing material, may be used to create a terrace in a day. Set up header boards and toss the stuff in to a depth of three inches or so.

Aggregates are inexpensive and smart-looking but do not last long. When worn out, however, they make solid bases for more durable paving.—*Jerry Parker.*

HOW TO SET BRICKS IN SAND. A terrace can be paved in easy steps if you divide the area into grids, using redwood two-by-fours, after putting down a 1" layer of sand. Make a screed board with an ear at each end to gauge the depth for bricks and use it to level the sand. Tap bricks in place with a hammer handle. Later tamp whole terrace with a wood tamper.

A wet basement?... the

cure begins outdoors

Avast, wet-cellar men! No need to man the lifeboats. Here's how to stop leaks and keep that yard water out of your house.

PORTRAIT OF A SUBURBANITE (left) inspecting his rain gutters—good insurance against a future flood in the basement. Cracked or clogged gutters let water spill onto ground beside foundation instead of out downspouts. Clean them regularly and patch inside cracks with asphaltum paint, outside ones with calking compound. Keep your downspouts clear, too, with pressure from hose or a stiff wire.

DON'T LET DOWNSPOUTS pour onto the ground next to foundation. Try to have them drain onto a sidewalk, terrace or garage apron that will carry water away from the house. If not, you can form shallow troughs of concrete or put in tile drains as shown below.

BAD GRADING can channel water into your cellar like a funnel. To provide good runoff, ground should slope away on all sides of house for at least 10'. Downspouts should be hooked up to drain tiles, set about 12" below soil, leading to dry wells or lower areas.

By Bernard Gladstone

A LOT of people forget that water in a basement comes from outdoors—and that's right where you can often stop it.

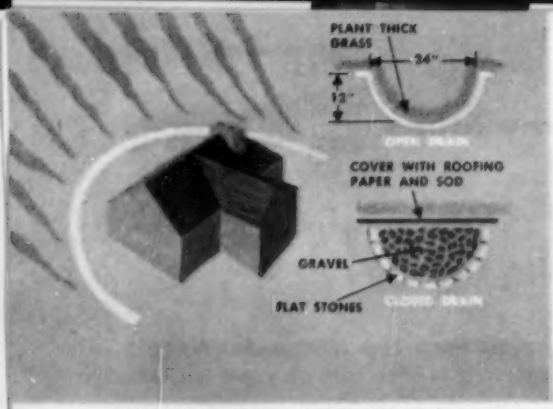
You can plug your walls until they look like a patchwork quilt, but water may still force its way back in if you let it stand outside. To keep a cellar dry, you should remove as many of the sources of water around it as you can find. Your problem may be as simple as a clogged downspout or a lawn that doesn't drain right—and you can correct these with a little work outside.

A wet basement means that you're wasting up to half your house—space that might be a pleasant workshop, a playroom for the kids, or a good, dry place for extra storage. Here's how you can put that space back to work by spotting the troublemakers and drying them up for good.

Where does it come from? The water that collects in your cellar comes, basically, from two sources—what's in the earth already, called ground water, and heavy rains.

The level of ground water, or water table, varies widely from one locality to another. After a rainy season, it may lie only a few feet below the surface of the soil in some areas. This water, pressing upward and inward on your foundation, forces its way in through cracks, small holes, even through your masonry. You may not be able to do much about ground water itself, but you can do a lot about the sources that feed into it.

In the spring, the gentle rains, babbling brooks and melting snows have an



YOU CAN'T MOVE A MOUNTAIN, but you can move the water if there's a steep slope that drains into your yard. This shallow, U-shaped ditch channels it around your house instead of against it. Ditch drains better if left open, but can be filled in so you can walk on it.

EXPOSED MASONRY soaks up moisture during wet weather, must be sealed on the outside first before you start inside repairs. You can coat the parts above ground level with a clear silicone waterproofer, as here, or use the same cement-base compounds that are put on inside.

WELLS FOR WINDOWS below grade should be kept clear of matted leaves, paper and other debris that soak up water and keep it from seeping away. If dirt at the bottom is hard-packed and won't drain, you can dig it out for several feet and replace it with sand or gravel.

unromantic way of adding to and raising the level of ground water until a dry lot can become a quagmire.

If your basement is continually wet, or water is seeping up through the floor, an exceptionally high water table may be the culprit. But if it floods only during a wet spell or after a heavy rain, the chances are that the water is coming mainly from temporary sources.

Drains carry water away. If your house was built without roof gutters, as many new homes are today, there should be gravel drains under all eaves to channel the runoff away from the foundation.

You can put drains in yourself by digging trenches about 1′ wide and deep and filling them with gravel, cinders or crushed stone. But such drains still let a lot of water seep down to the foundation, so it often is wise to add gutters.

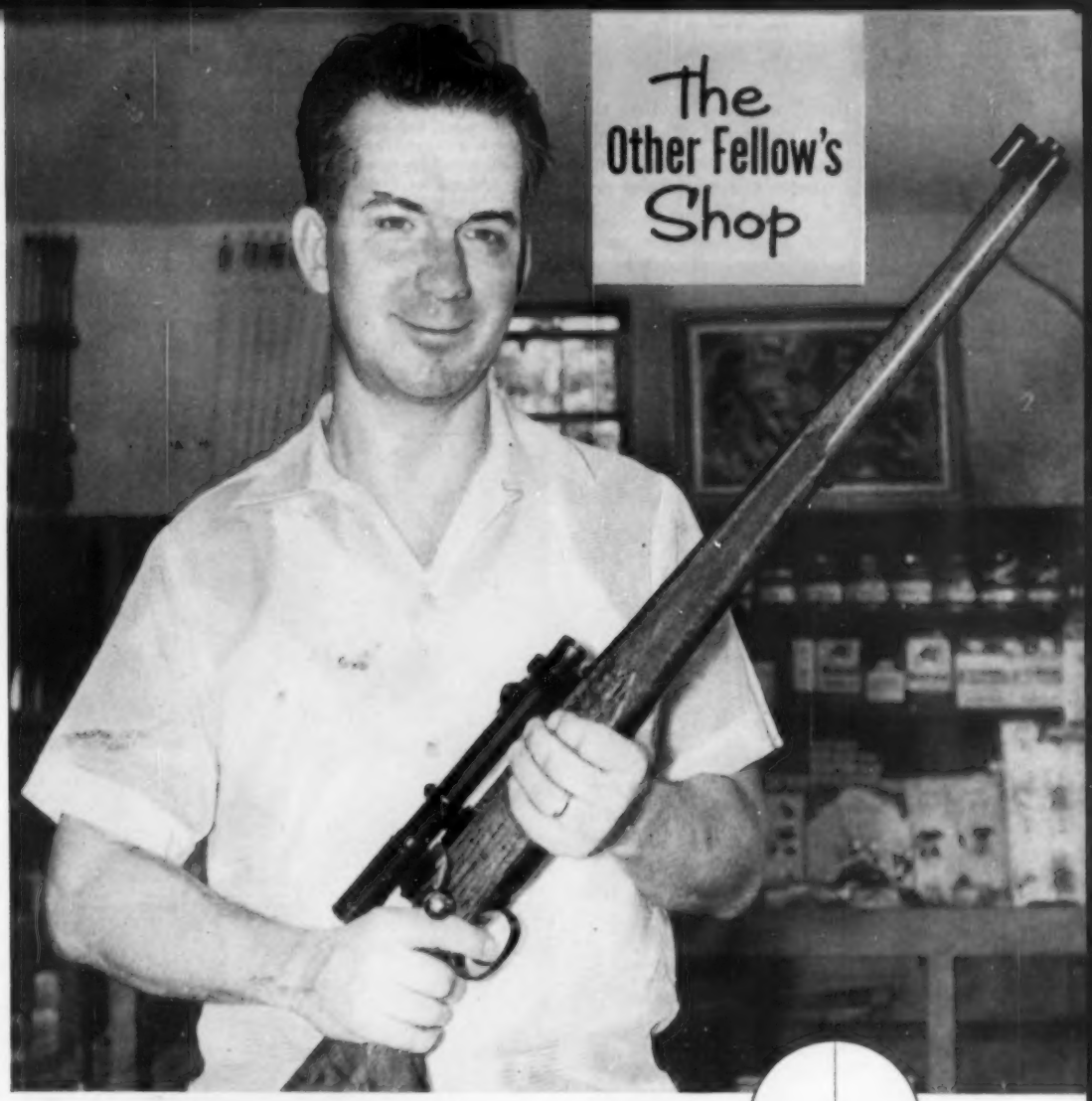
With gutters, you can carry the water farther away, since you can hook up the downspouts to drain tiles, as shown in the sketch on the preceding page. Where obstructions aren't a hazard, simply add an extension to the downspout, using the same metal tubing, and let it rest on top of the ground instead of laying tiles.

Grade should shed water. If your land slopes toward your house, it will funnel water into your cellar. For best results, it should be regraded to slope away and planted with a thick, tough sod that will shed the rain before it can seep down.

If this means an expensive bulldozer job or tearing up a brand-new lawn, you can still help a lot by installing drains. Start the tiles at the foundation and fan them out like spokes of a wheel at a slight downward pitch. You can put in solid tiles and lead them to dry wells, or for a quicker job use the perforated soil pipes that disperse the water into the ground along the way.

Once you've dried up the outside as much as you can, you'll have an easier job of sealing out the moisture from the inside. END

NEXT MONTH: How waterproofing paints and cements that stick even when wet make it easier to keep your cellar dry.



This Man Makes Dots

Tiny, opaque and perfectly round, Bob Thomas' famous specks help hunters put small game on the spot with deadly accuracy.

By Louis E. Garner Jr.

A NEIGHBOR of mine makes dots in his basement workshop. He also "milks" spiders for their silk thread. He uses it as cross hairs on which to mount the dots, which may be as small as three ten-thousandths of an inch (.0003) in diameter.

His name is Robert S. Thomas and his

handiwork is the Tommy dot. For the rifle hunter, that's 'nuff said, but if you are not a Nimrod, a few words of explanation are in order before I take you on a visit to Bob's unusual shop in Silver Spring, Md.

A Tommy dot is a type of reticle, or aiming point, required on all telescopic sights for hunting and target rifles. It indicates the exact spot on the target where the bullet will hit.

Among the three kinds of reticles in use today, the most common is a pair of cross hairs. These hairs, since they must be thick enough to be clearly visible to the eye, tend to cover a portion of the target. At short or moderate range, or where the target is fairly big, such as a deer, this doesn't matter. But where the range is long and the target small, as in "varmint" (small-game) hunting, the cross hairs may easily black out the killing zone.

He Dots the Cross Hairs

That's where the Tommy dot comes in. It is a tiny, opaque, perfectly round dot, suspended at the center of almost-invisible cross hairs fixed in the reticle cell of the telescopic sight. In use, the dot covers only the center of the target and makes possible accurate aiming on game as small as crows and woodchucks at distances of 300 yards or more.

As one of probably less than half-a-dozen makers of dot reticles in the country, Bob Thomas has his own trade secrets. One is the exact formula for the thermosetting material that goes into the dot. Another is how he gets the dot perfectly round.

Actually, Bob explains, dot-making is not too difficult, although he admits that it takes skills that are not acquired overnight—a modest statement. He developed and perfected the Tommy dot during the many years he worked as a precision lens and prism maker at the Naval Gun Factory in Washington, D.C. The tools you see in his shop are those of any well-equipped workshop—except for the important ones.

Ask him what these are, and he re-

A SPIDER IS "MILKED" for its silk thread, which will be used for suspending Tommy dots. The insect is grasped by a pair of tweezers as the almost-invisible thread is drawn out and carefully spaced on the U-shaped holder. It is then minutely inspected; the silk must be single filament and free of gummy droplets.

THE TOMMY DOT itself is made under an 80-power binocular microscope. The dot made, Bob cements two short sections of spider silk at right angles across the reticle cell, or ring, of the telescopic sight. Final step is applying the dot to the junction of the two cross hairs, using a specially designed tool.

TAPERED-POST RETICLE calls for painstaking grinding. Below Bob is shown using a special jig and grinding wheel mounted on a lathe to give a preliminary taper to a piece of stainless-steel rod stock measuring .012″ in diameter. Three grindings later, including a hand-shaping step, the rod will have a taper from .010″ to .003″ in diameter. Also, the sides of the post must be perfectly straight, and the top absolutely flat, with no burrs. That is why he works under a microscope for this job, too. Length of the post varies with the size of the telescopic sight's reticle cell, but is usually in the neighborhood of 3/16″.

THREE MAJOR DESIGNS for reticles—devices in the telescopic sight that indicate the point of aim—are illustrated here. Simple cross hairs, shown in the first drawing, are the most popular type of reticle. But where the target is small or the range long, the comparatively thick cross hairs may black out the killing zone, or even the entire target. The dot reticle (middle drawing) covers only the center of the target. At right is the tapered post and single cross hair. Westerners and big-game hunters generally favor cross hairs; Easterners are usually tapered-post men. Dot lovers, however, are distributed all over the country.

TO CHECK THE SIZE of his dots, Bob Thomas uses a collimator custom-built for the job. Dot sizes vary with customer needs and with the power of the telescopic sight in which they are to be installed. He guarantees every dot for the life of the rifle sight.

MAKING TOMMY DOTS often keeps Bob busy in his basement workshop, so Gladys Thomas waits on this customer in their Silver Spring, Md., sporting-goods store. The bows and arrows in the background are an indication of one of Bob's outdoor hobbies, archery.

plies, "Steady hands, steady nerves, excellent eyesight—and patience."

Then there are the spiders. You would undoubtedly find spiders weaving their webs if you poked around in the dark corners of many workshops—but not working in the capacity of essential shop assistants.

Bob must have spider silk for his cross hairs. It is the strongest material available in the small diameters he needs. Substitutes such as tungsten and other metal wires have proved unsatisfactory.

Big as a Minute

The sizes of the dots are measured not so much by their actual diameters in thousandths of an inch as by the angle of arc they subtend in the line of vision. This, measured in minutes, determines how large an area of target is covered by the dot at increasing distances from the shooter. A one-minute dot in a 2½-power hunting scope, for instance, is actually much smaller than a one-minute dot in a 10-power target scope.

Unless a customer orders a special dot, Bob usually puts in a three- to four-minute dot in a low-power hunting sight, a one- to two-minute dot in a medium-power scope, and a three-eighths- to five-eighths-minute dot in target and varmint-hunting scopes.

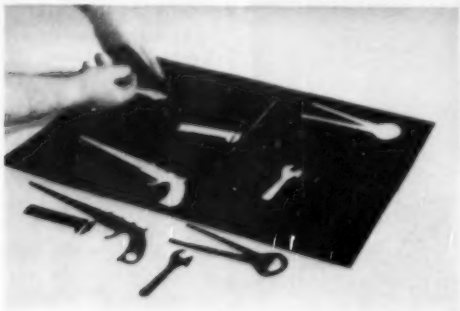
Although the 39-year-old dot-maker specializes in the Tommy dot (3,000 to 5,000 a year), he also makes the two other popular types of reticles, the cross hairs and the tapered post.

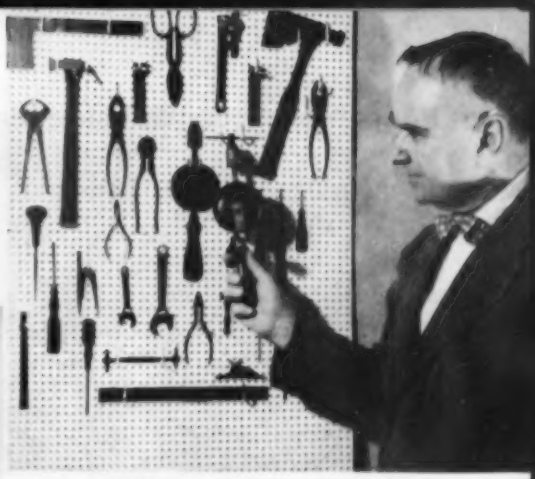
For Bad Light and Fast Game

The tapered post is runner-up to the Tommy dot in Bob's business. It is in demand for low-power scopes, for hunting under poor light conditions or for hunting rapidly moving game. Shooters with less than perfect eyesight also like it.

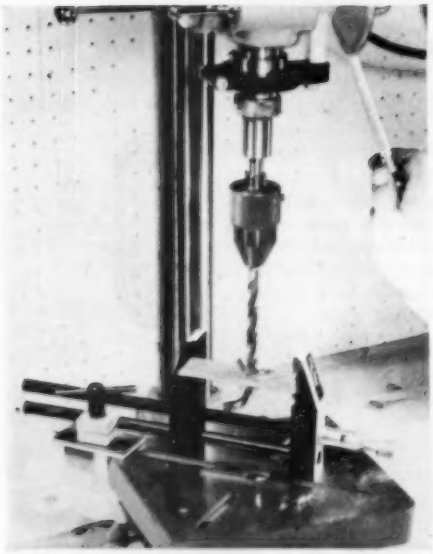
From time to time Bob is approached by people who want to learn the secrets of his dot-making. I asked him what he would charge to teach someone how to make the dots. "Not under $25,000," he said. Later he added, "And even at that figure I hope I don't get any takers." END

1. Silhouettes Show Where Tools Go. If you have trouble getting tools put back in the right place, these cutouts on the wall or rack provide an easy-to-follow chart. Full-size black or red silhouettes of 42 basic hand tools are available on die-cut adhesive sheets (below), or you can get blank sheets for making your own patterns.

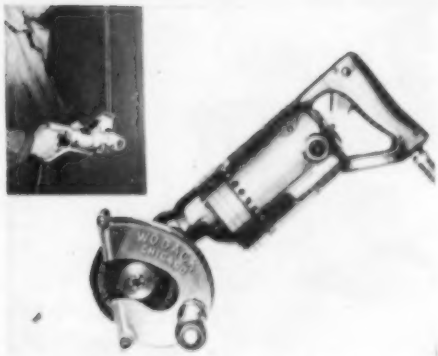




New Tools



2. Vise Swings to Any Position. A flexible precision vise, modeled after a bigger brother, is now built for home workshops. Of all-steel, floating-type construction, it can be swung off the bench, swiveled, used on side or end or set at an angle. You can use it on a drill press, bandsaw, or bench and in various other ways.

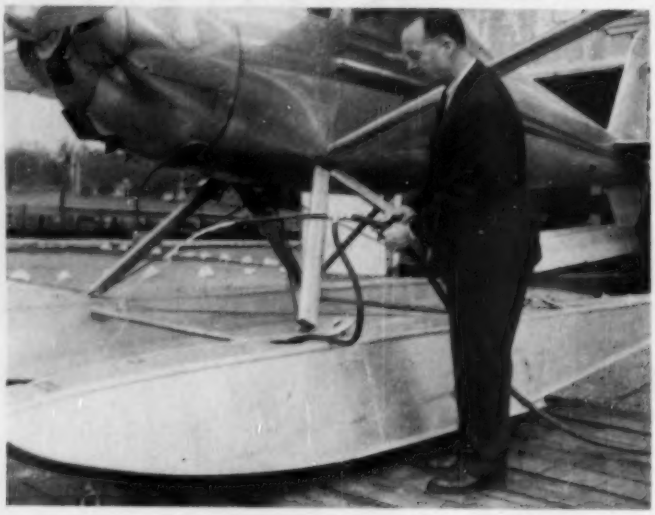


3. Cutter Makes Trench in Plaster. Two parallel 4" abrasive wheels on a trigger-grip cutter make quick work of grooving a plaster wall for new wiring. You adjust the wheels for width and depth, and finish with a chisel. It runs on AC or DC.

4. Pocket Oiler Counts Drops. Wherever oil is needed in drops, you will find this pocket-clip oiler convenient. It looks like a ball-point pen, and delivers a drop of oil each time the plunger is pressed.

Further information on the tools shown on this page can be obtained from: 1. Tool Shadows, 109 E. 81 St., NYC 28; 2. Float-Lock Corp., 261 Madison Ave., NYC 16; 3. Wodack Electric Tool Corp., 4627 W. Huron St., Chicago 44; 4. E. S. Tubin Engineering, 3906 Cohasset, Burbank, Calif.

Pump Made from Washing-Machine Hose Tee Drains Float



A PIPE tee that has been threaded for hose couplings, such as an aspirator taken from an old-fashioned washing machine, will enable you to drain a float, barrel or drum that is too large or awkward to tilt.

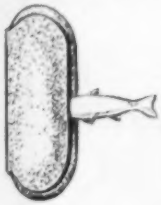
Insert the lateral hose in the float, connect one of the others to a hydrant, and turn on the tap. The flow tends to set up a vacuum in the lateral and sucks up water.—*Bob Blatt, Larchmont, N.Y.*

Dog Tether Is Tangleproof

HALF a bag of gravel-mix concrete, a harness ring and a length of old brass curtain rod will give you the makings of a dog tether which even a frisky pup will find tangleproof. Dig a small hole at the center of an open spot in your lawn and fill it to the surface with concrete. Double the curtain rod, slip the harness ring over it, and then embed it in the soft mix.—*John E. Weidner, Cincinnati.*

Eyeglass Case Holds Bait

WHILE fishing, I found that a spring-type spectacle case is fine for holding minnow bait in position until I get it fastened on the hook. Just place the wriggling minnow part way in the case and the fish won't slip away from you.—*Russell L. Card, Tweed, Ont.*



Mirror Helps Find Tiny Parts

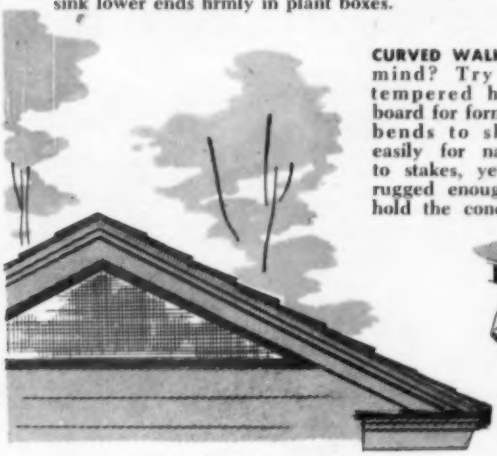
TO KEEP track of small parts when you work on delicate mechanisms, use a mirror as a tray. The reflection helps you spot them. A taped section prevents spilling.—*Hugh Lineback, Stillwater, Okla.*

KEEPING THE Home SHIPSHAPE

VERTICAL PLANT STANDS dress up a house that has an overhang. Slip holed shelves of oval or paddle shape over wooden curtain poles. Fix upper ends of poles to wood blocks and sink lower ends firmly in plant boxes.

COVER THE THERMOSTAT to keep out dust when the screens go up. Tape a cut and bent matchbox over the instrument or wrap it with the plastic film used for wrapping food.

CURVED WALKS in mind? Try ¼" tempered hardboard for forms. It bends to shape easily for nailing to stakes, yet it's rugged enough to hold the concrete.



TO FOIL WASPS that eye your attic for a home site, cover louvers with bronze or plastic screening. Brass tacks hold the screen in place.

Please turn the page for more home tips

More Home Tips

A WEAK CATCH on an umbrella won't give way unexpectedly if the top is filed off at an angle to support the sleeve.

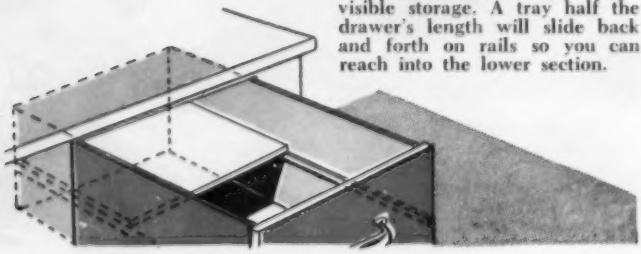
NEXT TIME YOU HANG PAPER get out your jigsaw and saw off the edges of the wallpaper before you unroll it. The saw does a smooth, fast job.

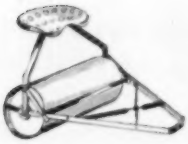
WASHING WALLS? Start from the bottom and work up. You'll find streaks much easier to wipe off from a clean surface. Do ceilings last.

A MALLET RACK from a discarded croquet set makes a good holder for small-fry garden tools. It will also support a hose for shower-minded youngsters if the nozzle is drawn up through one of the holes.

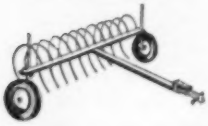
IF A WINDOW STICKS because of hardened paint, run a knife around edge of frame and push up on center sash. To avoid breaking pane, push at sides, not middle.

DOUBLE-DECKER BINS give more visible storage. A tray half the drawer's length will slide back and forth on rails so you can reach into the lower section.





RIDING ROLLER



HAY OR LEAF RAKE

GRASS SWEEPER

New Yard Tools Are Jacks-of-All-Trades

Power packages with more accessories than a homemade hot rod speed your garden jobs.

By Sheldon M. Gallager

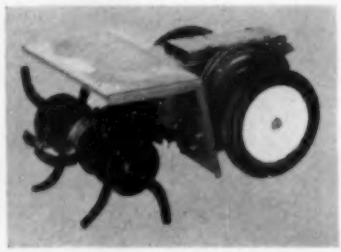
SATURDAY farmers are getting a brand-new crop of mechanical aids to lighten their weekend gardening chores. Now that power mowers and other basic equipment have been on the market for several years, many manufacturers are turning their efforts to new tools or to improvements that make old ones more versatile. Now,

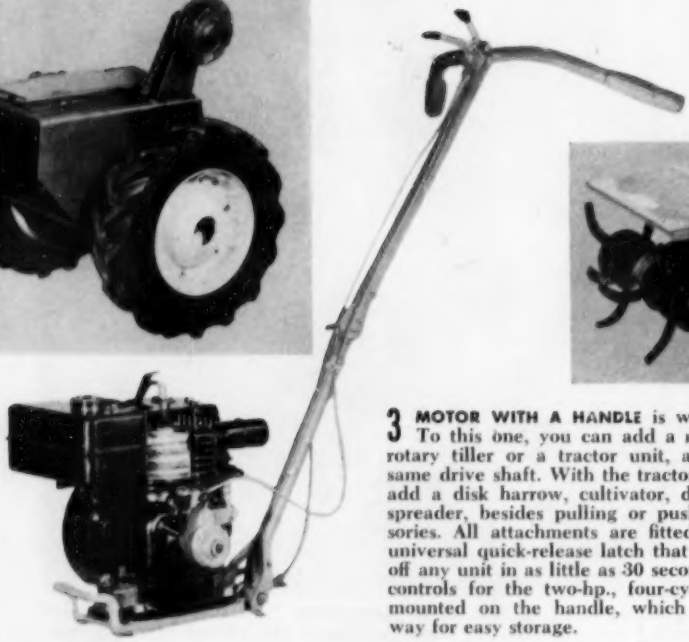
DISK HARROW

1 **NEW LOOK FOR HOME GARDENERS.** New and versatile power tools like this do a whole yardful of jobs without ever complaining of an aching back. This one will simultaneously mow the lawn, haul a cartload of earth, and give its owner a joyride. Basic two-wheel tractor can be fitted with either a reel or rotary mower, plus the sickle bar shown above. It will also roll your lawn, rake up leaves, sweep sidewalks, plow, doze earth or snow, saw wood, spray chemicals, or run a 2,000-watt generator.

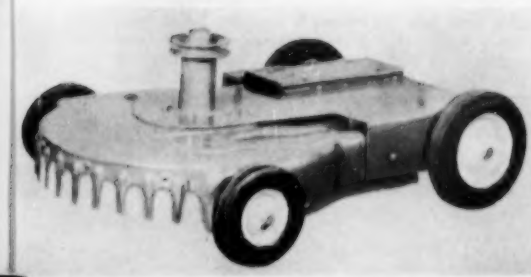
Power packs add versatile attachments

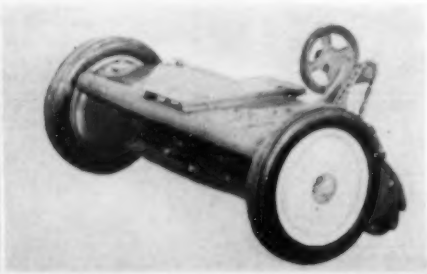
2 TAKE YOUR PICK. This all-purpose 1½-hp. tractor will power any of 10 different accessories. On the tractor is a rotary tiller. Grouped around it, left to right, are a seed dispenser, cart, cultivator (on top of cart), rotary mower, fertilizer spreader, another seeder, another rotary mower, a reel-type mower and a dozer blade. The gasoline-powered tractor unit also comes in a one-hp. model that takes the same attachments.





3 MOTOR WITH A HANDLE is what you start out with. To this one, you can add a reel or rotary mower, a rotary tiller or a tractor unit, all belt-driven from the same drive shaft. With the tractor attached, you can also add a disk harrow, cultivator, dozer blade or fertilizer spreader, besides pulling or pushing many other accessories. All attachments are fitted to the engine with a universal quick-release latch that lets you put on or take off any unit in as little as 30 seconds. Throttle and clutch controls for the two-hp., four-cycle gasoline engine are mounted on the handle, which folds back out of the way for easy storage.





many mowers no longer merely mow. They've become basic power packages—or part of a package—that will run just about any outdoor tool you can name.

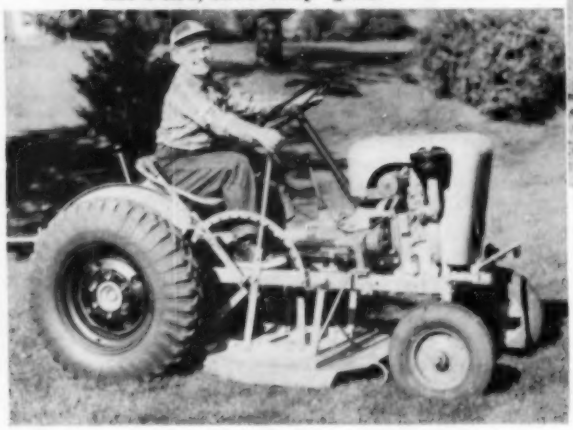
By adding interchangeable attachments, you can plow, till, seed, roll and spike your soil, saw wood, move earth, rake leaves and cart rocks—all without bending over or getting out of your seat. In winter, the same machines can be used to haul firewood, clear snow, or roll out a toboggan slide for the kids.

Farming on a 50-foot lot. Tractor units, once imposing hulks of ironmongery, are being slicked up and slimmed down to do big jobs on small plots. They turn on a dime, climb steep grades, run well under the guidance of a wife or small boy, and are styled to catch the ladies' eyes like the latest chrome-plated lollipops out of Detroit. Even the small hand tractors are now available with riding attachments that let you work sitting down.

Whether your job is large or small, you have more tools to choose from than ever before. And you'll be able to do more work with fewer tools because each one does more work itself. END

5 WHEELED FRAME fastened behind this reel-type mower converts it to a small riding tractor that will pull many other garden tools. It can also be fitted with twin outrigger mowers for cutting a wide swath.

4 MOWER ATTACHMENT for the 8.4-hp. tractor below is slung under the frame, can be put on or taken off in minutes. When you come to an obstruction, you just pull a lever that lifts the cutter off the ground. Blade rides on lawn like a sled, can't "scalp" grass.



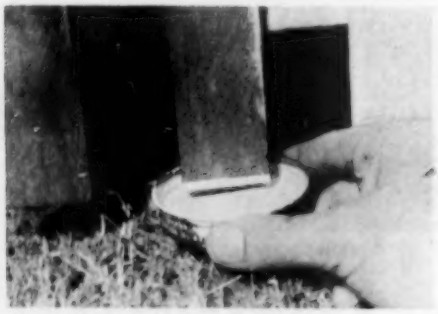
6 OVERHEAD SEAT carries you at 4½-m.p.h. clip on top of this three-hp. rotary mower. Tractor-type body is built over blade guard, which serves as a footrest. It hauls a seeder, spiker, roller and small cart.

Further information about the garden tools shown on this and the preceding pages can be obtained from: 1. Cheston L. Eshelman Co., 119 Light St., Baltimore, Md.; 2. S. L. Allen & Co., 5th and Glenwood Ave., Philadelphia, Pa.; 3. Farm-Ette, Mantua, Ohio; 4. Country Squire Tractor Co., P.O. Box 107, Muskego, Wis.; 5. Reo Motors, Inc., Lansing, Mich.; 6. Musgrave Mfg. Co., 2755 Columbus Ave., Springfield, Ohio.

Lazy Susan Gives a New Turn to Your Scrabble Board

You can do away with the fuss of turning a Scrabble board from one player to another by building a Lazy Susan like the one shown here. All you need are two 16" disks of ¼" tempered hardboard, the top of a coffee can, a dozen marbles, a flat-headed bolt, a nut and four metal chair-leg buttons.

The tin-can lid, loaded with marbles, serves as a turntable bearing. Pass the bolt through holes drilled in the disks and the can lid, and anchor the assembly with the nut. The metal buttons, which are attached to the bottom of the lower disk, provide clearance for the nut. Prime and paint the upper disk and, to hide the countersunk bolt head, glue a copy of the Scrabble rules or a decorative cutout over it.



Jar Lid Paints Picket Bottoms

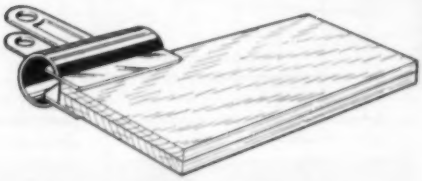
Painting the bottoms of fence pickets can be an easy job. Pour paint into a jar cover and bring it up against each picket. For wide pickets, use a shallow pan.—*Henry V. Lukas, Inglewood, Calif.*

Crutch Tip Softens Hammer

There is no reason to invest in a rubber-faced hammer if your need for one is only occasional. Just slip a rubber crutch tip on an ordinary hammer.—*Frank A. Javor, North Bergen, N. J.*

Bar Breaks Tire Bead Loose

A STUBBORN tire bead can be broken away from the rim with this home-made device. It consists of a steel-pipe pry bar and a 12″ piece of four-by-four. The pipe is drilled at the end and bolted to the wall to form a pivot. The wood block is notched at one end to keep the bar from slipping off as the tire changer bears down and leverage is applied.—*Bob Blätt, Larchmont, N.Y.*

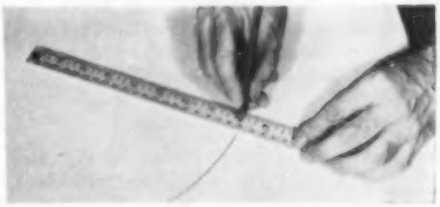


Paper Clips Clamp Balsa

CEMENTING thin sheets of balsa wood and other soft materials that would be damaged by ordinary C clamps is easy with spring-backed paper clamps. They exert gentle pressure over a large area and come in various sizes to suit different thicknesses.—*R. L. Clough Jr., Bristol, N.H.*

Ruler Draws Large Circles

A RULER used as below will make an inexpensive compass for drawing large arcs and circles. Drill a small hole at the end to take a thumbtack for a pivot, and a series of larger holes so you can insert a pencil point at any desired distance along the ruler.—*Eric R. Adams, Toronto.*



SPRING TERMS

ARBOR—A round, hardened rod or shaft upon which springs are wound. Also called a "mandrel."

COIL—To form wire into a helix in an automatic coiling machine.

PERMANENT SET—When any material is deflected so far that its elastic properties have been exceeded and it does not return to its original condition upon release of load, it is said to have taken a "permanent set."

PITCH—The distance from center to center of adjacent coils in a spring when it is free of load. Also called "lead" and sometimes expressed as "coils per inch."

RATE PER INCH—The load in pounds needed to deflect a spring 1″. Also called "scale," "gradient" and "load factor."

REMOVE SET—The process of closing solid a compression spring which has been coiled longer than desired finished length, in order to increase the elastic limit. Also called "press" and "set."

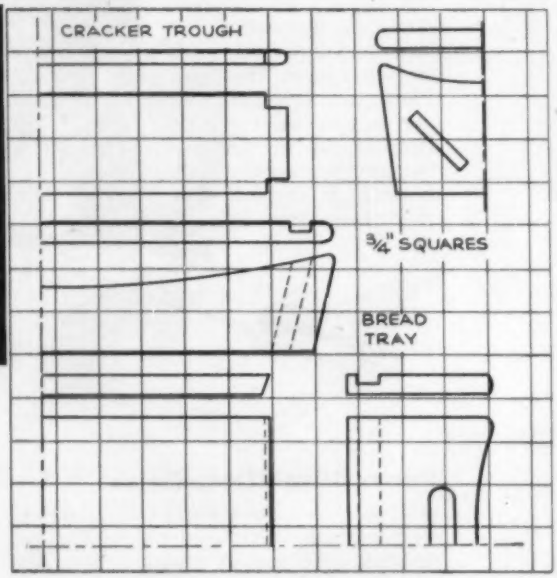
SOLID HEIGHT—Length of compression spring when under sufficient load to bring all coils into contact with adjacent coils. Also called "solid length" or "closed height."

SPRING INDEX—Ratio of mean diameter to wire diameter.

FOR YOUR POPULAR SCIENCE MONTHLY INFORMATION FILE

One-Evening Projects

3 Smart Kitchen Accessories

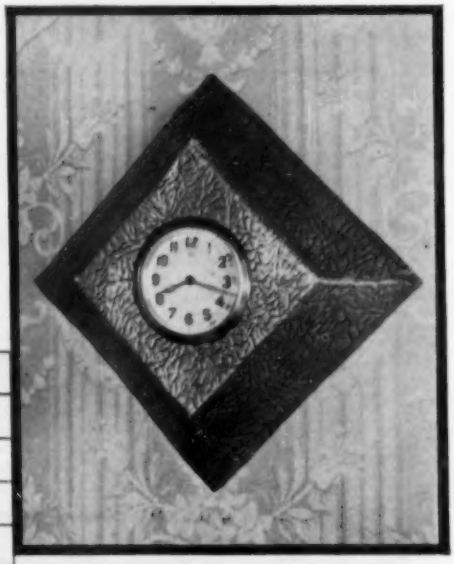


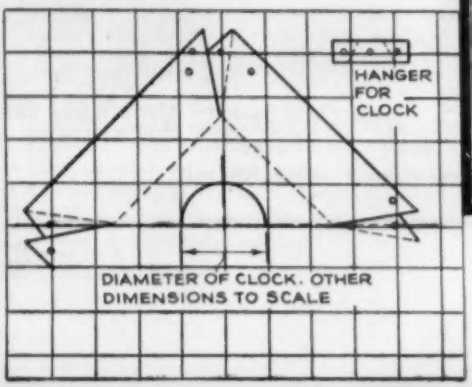
1 SCRAPS of boxwood, ⅜" and ¼" thick, can be shaped into this colonial serving set in jig time.

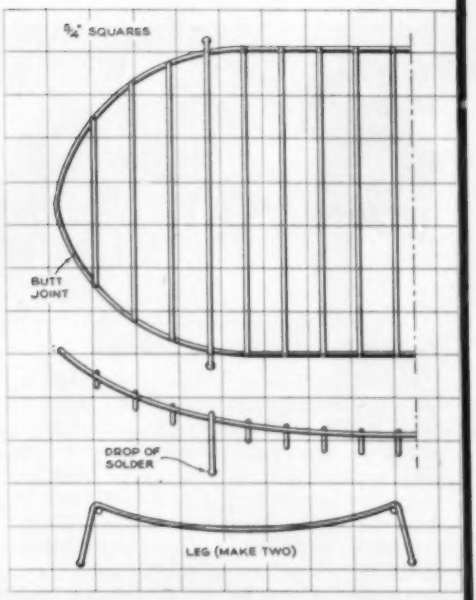
Mortised joints in the cracker trough are glued; those in the larger bread tray are bradded for additional strength. Round all sharp edges and finish with maple stain and wax.—*Sam Grant, NYC.*

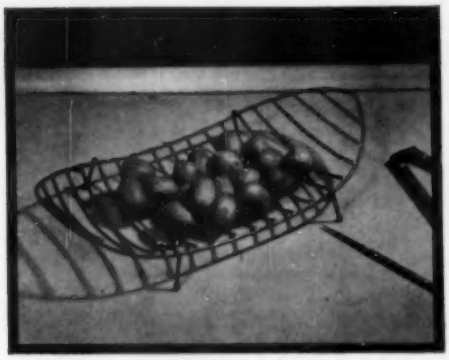
2 TO CONVERT that shabby desk clock into a handsome miniature wall clock, all you need is a small sheet of embossed aluminum and a few rivets. Scale up the pattern so the timepiece will fit in the circular hole, fold back the aluminum along the dotted lines, and rivet the flaps to the beveled sides. Rivet a strip of metal to the back of the case at one corner for a hanger.

Insert the clock, and anchor it in place, using the same fastenings which held it in its original case.









3 Fruit, nuts or flowers look well in this modern wire dish, made from coat hangers. Bend the frame to shape, point the ends with a file, and solder or braze them to a smooth butt joint. Then give the frame a longitudinal bow so that the ends will be about 1½" higher than the center. Solder or braze curved cross ribs in place, using two that have projections for the legs. File or grind all of the other cross ribs flush with the frame at their outer ends.

Put rubber tips on the legs or solder or braze blobs of alloy to them to form foot knobs. Finish with flat enamel or lacquer.—*Walter E. Burton, Akron, Ohio.*

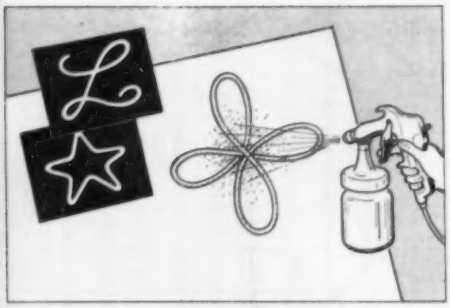
Balsa Buoys Mark Mooring

DISSATISFIED with commercial and makeshift mooring buoys, Frederic C. Jay of Baltimore made his own. It's a giant balsa bobbin with a white-oak center spike shackled at the bottom for a galvanized-iron ring. Impregnated to resist fungi and rot, the balsa was given several coats of filler and a brilliant marine-paint finish.

So distinctive is his buoy, Jay is kept busy filling orders from clubs and other boatmen.—*Ralph Reppert, Baltimore.*

Flashlight Bulb Is Good Bobber

A USED flashlight bulb makes a good fishing bobber. Attach the bulb to the line with a rubber band and you can slide the bobber up or down to different depths.



Twine Forms Spray Stencil

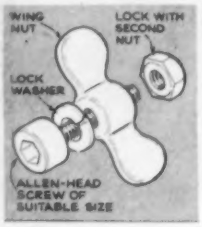
MODERNISTIC stenciled designs for use in spray painting may be formed with ordinary twine laid on work that can be placed horizontal for spraying. Because the twine is not completely flat, you will get a soft-edge effect that can be very pleasing. Be sure to spray lightly so the design will not fill in.

Initials can be added with gummed letters used for package decoration. Moisten them slightly so they will be easy to remove after the paint has dried.—*Charles L. Anderson, Burlingame, Calif.*

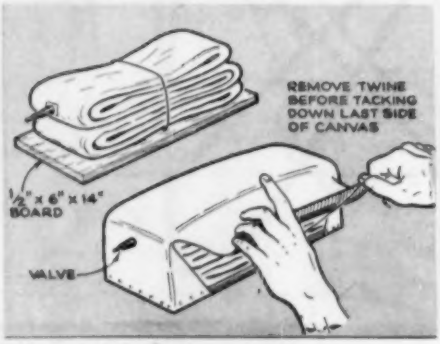
Allen Screw Used as Wrench

YOU can improvise a small socket wrench from an Allen-head screw if the need arises for one.

Slip on a lock washer and screw on a wing nut as a handle for light duty. For heavier work, back the wing nut with an ordinary nut.—*Alfred H. Fortier, Rockville, Conn.*

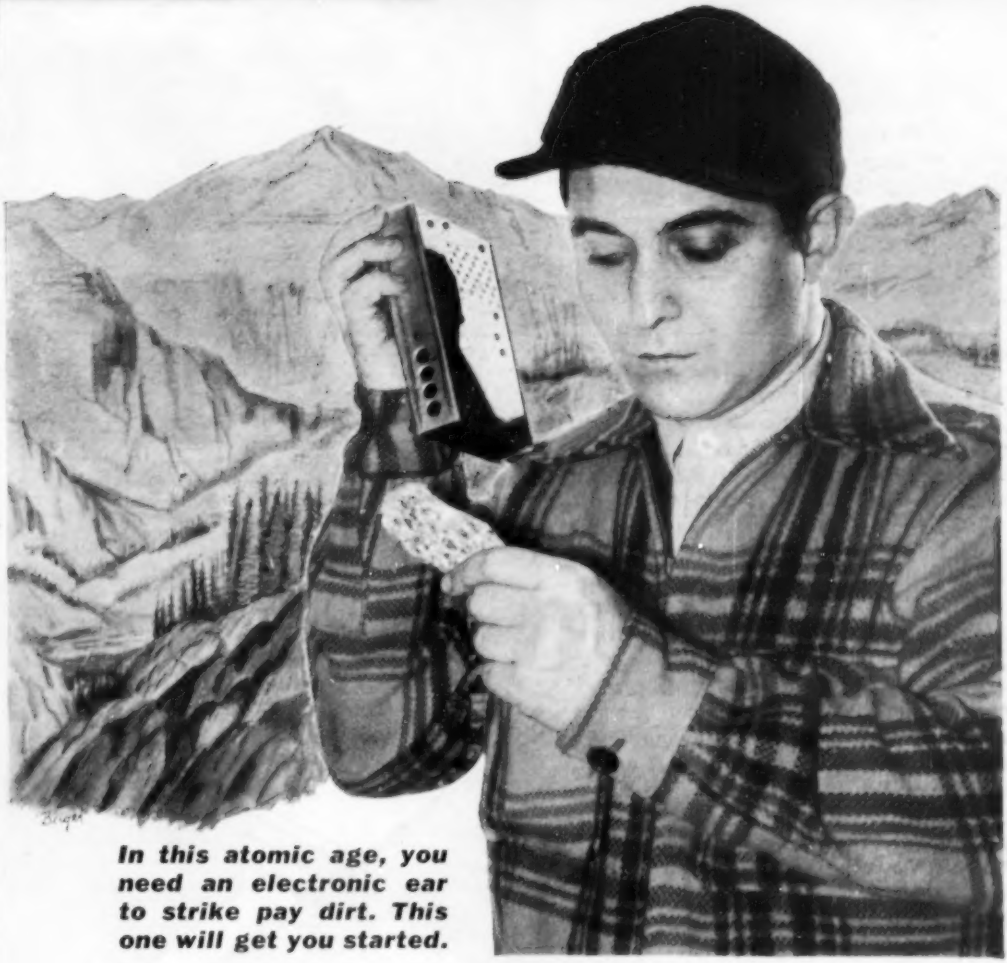


Inner Tube Attached to a Board Makes Garden Kneeling Pad



FOR a comfortable kneeling pad, or mat, inflate an old, patched inner tube slightly, double it over several times and tie together loosely with a piece of string. From ½" stock cut a baseboard about 6" by 14". Place the tube on the board and cover tightly with canvas tacked along the edges of the board.

Allow the valve to project through a hole in the side of the canvas cover and, before tacking down the last flap, cut the string which holds the inner-tube folds together. Finally, add a bit more air.—*John C. Craig, Edmonton, Alberta.*



In this atomic age, you need an electronic ear to strike pay dirt. This one will get you started.

Prospecting with a Geiger Counter

YOUR country needs uranium. Fortunes already have been made from it—and more will be. You may never be that lucky. But with a Geiger counter in hand it's easy at least to dream.

On these pages you'll find a small one, as easy to build as a one-tube radio. It's mostly for fun, although its ticks will register even small amounts of radioactive ore.

Next month, if you are really serious about heading out into ore country, you'll want to read about—and probably build—one of the most efficient Geiger

counters yet devised. It's a worthy survey and prospecting tool for professional use.

The simple little counter you see here was designed and built by Edward J. Gauss, a staff member of the University of Colorado. It signals radioactivity by irregular ticks or clicks—the faster they come, the "hotter" your find.

You can buy the Geiger tube by mail for a little over three dollars; the other parts should be available locally. If all are bought from a mail-order radio-supply house, they will come to about $11, including a single earphone.

Juice from flashlight cells. A Geiger tube requires upwards of 800 volts to work. Yet this compact little job has a self-contained power supply—a tiny 22½-volt hearing-aid battery and two medium-size flashlight cells. These latter supply both filament juice and the necessary high Geiger potential. It's all done with a push button.

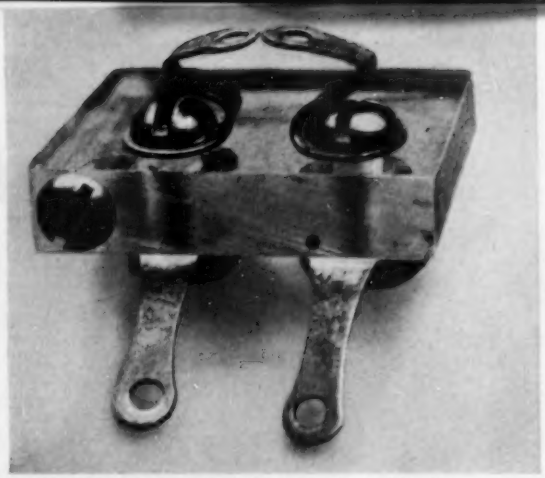
To use the unit, the switch is turned on and the push button tapped several times. Each time, a high voltage induced in the high-impedance transformer winding jumps the tiny spark gap, charging condenser C1. Between taps, the gap prevents discharge of the condenser back through the transformer.

Nine or 10 taps should charge the system enough to operate the Geiger tube; excessive charging may shorten tube life or break down the condenser (the Geiger tube should have a life of about 100,000,000 counts).

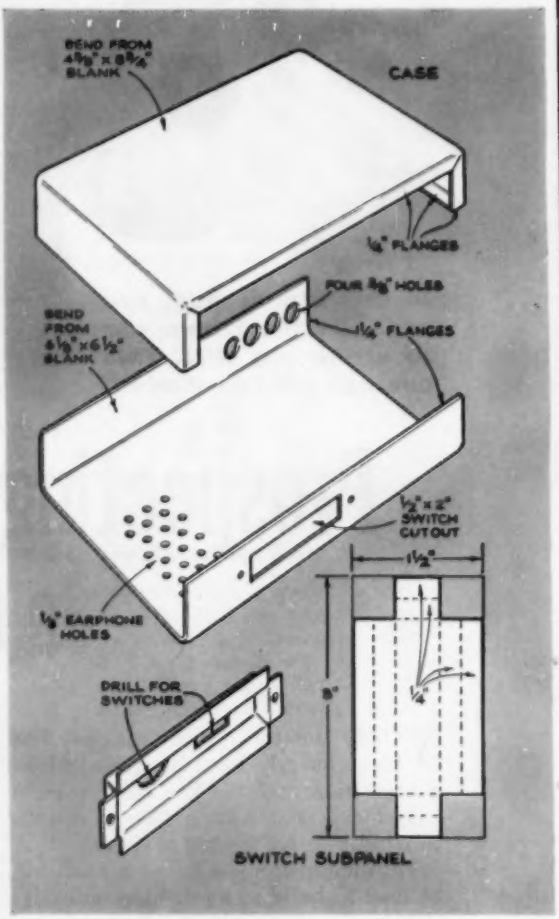
With the condenser charged, the tube will count for several minutes until voltage drops too low. Another tap or two of the switch will start it working again. Such booster taps can be repeated as often as necessary.

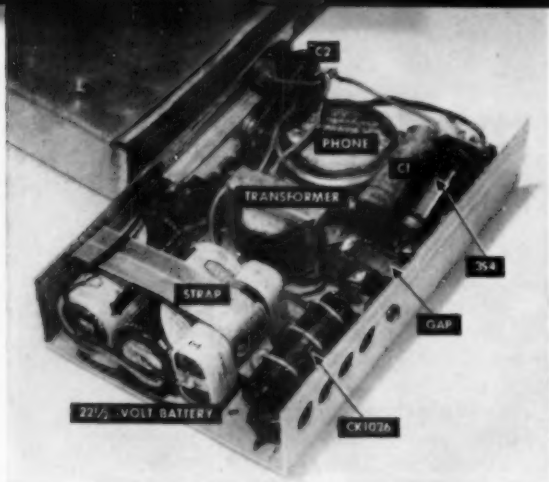
Case is pocket sized. The box shown was made by bending fairly heavy aluminum as in the drawing. Hold the halves together with bolts placed where they won't touch wiring or terminals.

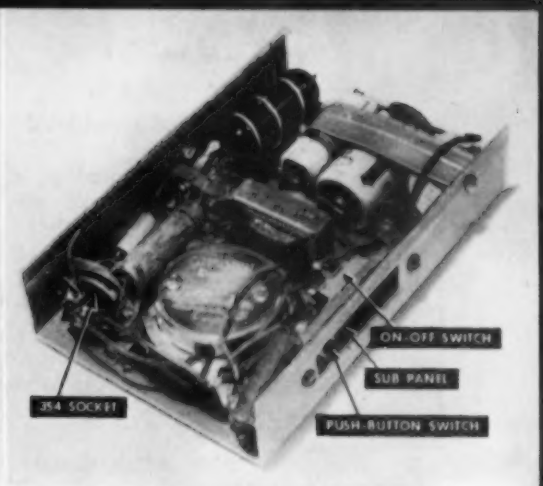
You might use a pocket-sized plastic box of the kind sold for small parts, fishing tackle and the like. In this case, the Geiger-tube mount and other connections to ground lugs will have to be joined to a



MINIATURE SPARK GAP helps turn the trick of boosting flashlight-cell juice to 800 volts. Spark occurs between two bent lugs on top of plastic block. Bolt at left is for mounting.



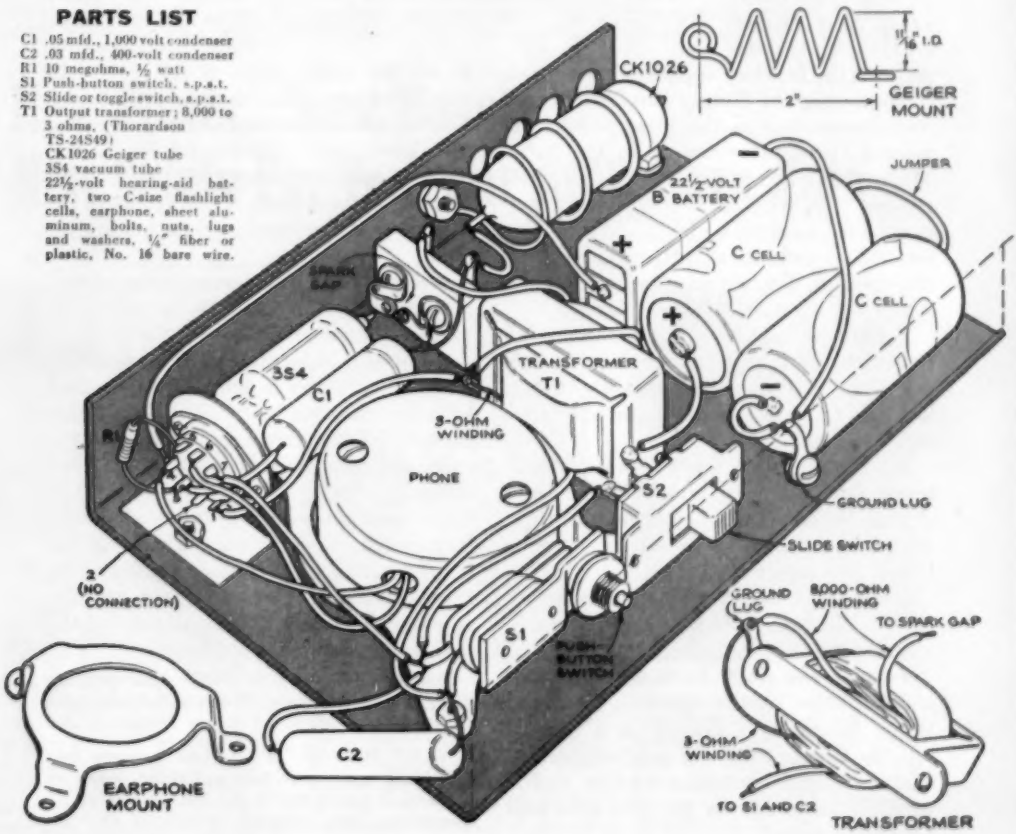




COVER-OFF VIEW shows compactness of the outfit. The three batteries are grouped under a common metal strap at nearer end of the case. Black Geiger tube in its spiral mount is beside them. The earphone and 3S4 tube occupy most of the opposite end, as shown at right above. Switches are recessed so that they cannot be turned on accidentally in the pocket.

PARTS LIST

C1 .05 mfd., 1,000 volt condenser
C2 .03 mfd., 400-volt condenser
R1 10 megohms, ½ watt
S1 Push-button switch, s.p.s.t.
S2 Slide or toggle switch, s.p.s.t.
T1 Output transformer; 8,000 to 3 ohms, (Thorardson TS-24S49)
CK1026 Geiger tube
3S4 vacuum tube
22½-volt hearing-aid battery, two C-size flashlight cells, earphone, sheet aluminum, bolts, nuts, lugs and washers, ¼" fiber or plastic, No. 16 bare wire.



common wire or to a metal panel inside the case.

The two switches are mounted on a recessed subpanel. This prevents the unit from being turned on accidentally.

Building the spark gap. Drill two 5/64" holes ½" apart in a small block of plastic, hard rubber or thick fiber. In these holes set two bolts, each with a large lug under the head and another under the nut. Bend the first lugs so as to leave about 1/100" between their inner edges.

Mount the gap with a bolt through the third hole that does not touch either contact. The single earphone can be held in place with a homemade clip and three bolts. A simple right-angle bracket supports tube base.

HINT TO AN UNHANDY HANDY MAN

Here's an old saw you can put in your file:
A saw that you file saws in easier style.
—Berton Braley

Mounting the Geiger tube. The outer metallic coating on the glass bulb is the second (ground) terminal of this tube. Make a spiral from heavy bare or tinned copper wire such as 16-gauge, with two eyes for mounting bolts. Wind this around something slightly smaller than the tube. If this fits loosely, deform the spiral slightly until it is held firmly.

Solder in batteries. A strap holds all three batteries, and connections are soldered directly to their terminals. Use a hot iron and work fast to avoid overheating the cells.

All wiring from the gap side of the transformer carries high voltage, and should be well insulated from the case. The high voltage will jolt a careless finger, but is not dangerous.

It's best to use a new condenser for C1; an old one, even though it works in a radio, may not hold a charge.

Testing the unit. Turn on the switch and tap the button quickly 10 times. When struck by a cosmic or a gamma ray, the Geiger tube will conduct current momentarily. This forms a pulse at R1, which is amplified by the 3S4 tube and heard as a click.

In a quiet place, you should hear a "background count" of five or more clicks per minute. This is usually due to cosmic rays, and at high altitudes may go to 50 per minute.

Now bring a radium-dial watch near the holes in the case, and the count should go up to several a second.

If you hear no clicks, discharge the condenser C1 with an insulated screwdriver and remove the Geiger tube to make the following tests:

1. With the switch on, tap the push button several times. If this produces clicks, the amplifier (3S4 and its 22½-volt battery) is working. If not, recheck its parts and wiring.

2. Tap the push button again and watch the spark gap. In dim light, you should be able to see the spark jump. If you don't, the gap may be too wide or the wiring faulty.

3. If sparks are seen in the previous test, leave both switches off for 30 seconds. Then short-circuit C1 with an insulated screwdriver. A lively spark indicates that the condenser is holding its charge.

4. Check the transformer connections; if nothing else works, try reversing the high-voltage leads.

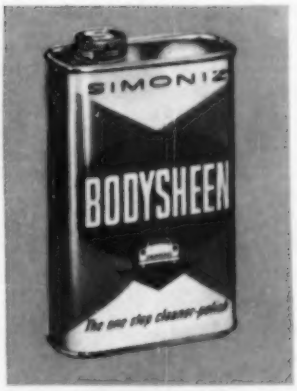
Field use. Keep the switch off except when the counter is actually being used. In cold climates, carry it in an inside pocket, as the dry cells will give less juice and may even be damaged if long chilled.

Information on using the counter may be found in several books. A popular one is *Prospecting for Uranium*, published by the Atomic Energy Commission and the Geological Survey. You can get it from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. by sending 30 cents in coin. END

NEXT MONTH: A sensitive counter you can build with two to six Geiger tubes in cascade. It has a meter for easy sampling of specimens. The original circuit of this instrument was developed in the laboratory of the U. S. Atomic Energy Commission.

It's easy to repair brakes with Wizard Master and Wheel Cylinder Kits. Includes live rubber cups, boots; precision made valves, springs. For most cars, trucks. Master Cylinder Kits, less piston (S5070-48) from.....**65c**
Wheel Cyl. Kits (S5905-28) from **35c**

Wizard "Twin-Fire"® patented spark plug gives top performance twice as long as single electrode plugs. Each electrode fires one at a time while the other "rests", stays accurately gapped up to twice as long. Guaranteed 18,000 miles. Each, in sets.....**75c**

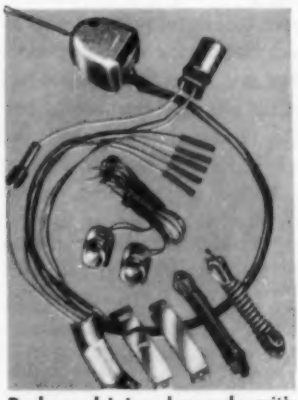


The one-step cleaner-polish! New Simoniz Bodysheen cleans and polishes, in one easy step. Just wipe on, then wipe it off! Brings out natural brilliance, enriches colors. Gives your car a long-lasting, weather-resistant finish. (SP7113).....**98c**

New Power...New Beauty... New Safety For Your Car At Western Auto

STORES AND ASSOCIATE STORES

RIGHT: Western Auto Associate Dealers own their stores and set their own prices, terms and conditions. Prices may vary due to differences in local conditions. (P345)



Reduce driving hazards with this Turn Signal Set. Automatically returns to neutral position after turn is made. Blends with dash, steering wheel. Flashing red indicator light. (2L6176)...**$6.45**
Wiring kit, with all installation material. .....(2L6177-65) **$2.98**

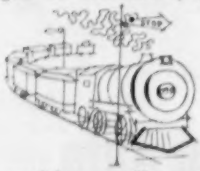
Car Top Carriers — complete, ready to install. Mount on any car top quickly, easily. Adjustable. Heavy web straps anchor to rain guard — Vacuum cups support and cushion any load.
Strong steel 45" (CS222) Pr. **$8.55**
Hardwood — 48" (CS229) Pr. **$6.35**

Add new beauty and style to your car's interior, and protect your floor mat from wear with these handy rubber Utility Mats. Also has many uses around the house. Choice of 5 colors. 17"x17" (2N1105-9) .....Ea. **89c**
17"x 20" (2N1110-14) .....Ea. **$1.19**

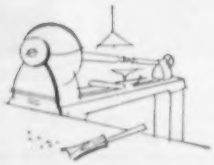
FREE: Mail post card today for folder explaining how to get more horsepower from your car. Write Western Auto, Dept. 2005, 2107 Grand, Kansas City, Mo.

Pictures that make your hobbies leap to life!

Every camera owner with a workshop or a studio or an out-of-doors hobby sooner or later brings his lens to bear upon it. It just seems the natural thing to do—to record photographically for his own pleasure or to exhibit to others the boat he has built, the track layout he has designed or maybe just the new paint job on the family garage!



But now, something new has been added—the revealing and exciting realism of 3-dimension photography called *stereo*. If that new HO-gauge passenger train looked good in an ordinary snapshot, stereo makes it seem to leap to life. A gardenful of vari-colored blooms becomes so real you feel you're standing in the very midst of them. Those who make and enjoy Kodachrome slides will get a special thrill out of stereo. For in three dimensions the already magical effect of Kodachrome's rich and lifelike color is multiplied many times over by an utterly new and satisfying kind of realism.

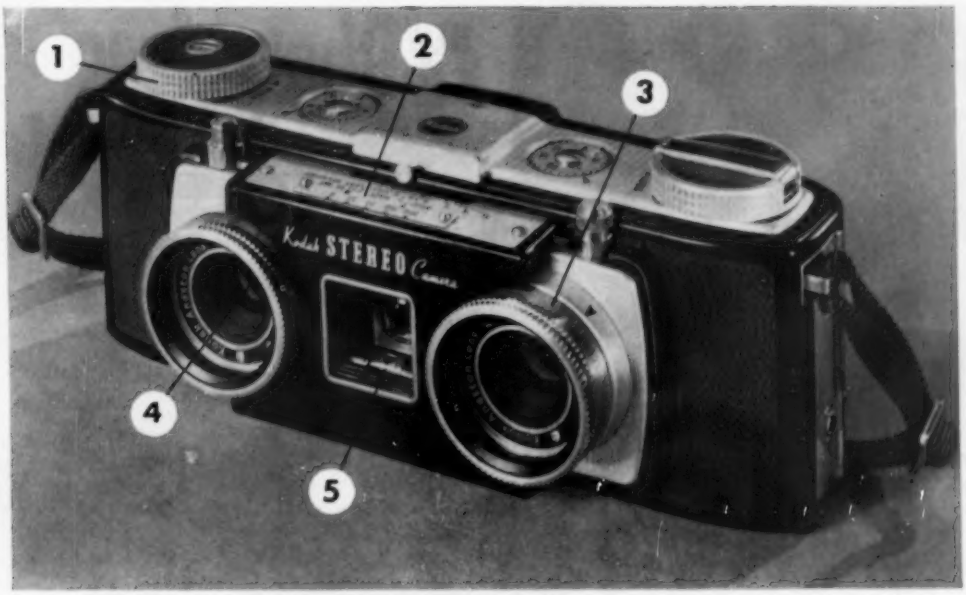


To the hobbyist looking for a new twist to add to his favorite avocation—whether it's making things or doing things—the recording of it in full-color stereo is guaranteed to add some real zest. And for exactly the same reasons, stereo snapshots of the family, of vacations and of travels will be enjoyed as family snapshots have rarely been enjoyed before.

Today's stereo photography is nothing at all like the crude product of earlier days. To begin with, we have the magic medium of Kodachrome transparencies whose rich hues are viewed by transmitted light. But equally important is the new Kodak Stereo Camera—described on the next page—which has brought both an ease and a precision to stereo picture-making which will delight anyone who enjoys equally a fine piece of mechanism and the perfection of the work it can do.

Supplementing the camera are Kodak's two superb stereo viewers, which make Kodachrome images sparkle as never before; and, of course, they provide the optical precision by which stereo seems to lift you right off your chair!

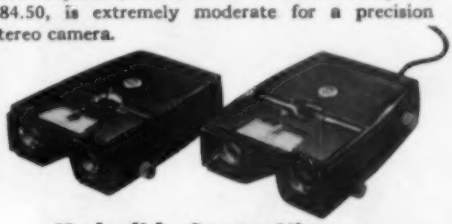
Kodak dealers are pretty enthusiastic about this Kodak stereo equipment. The one you deal with can show you some of the exquisite results you can expect with it. They'll be pictures worth walking several blocks to see—Kodachrome transparencies which seem to draw you right out into three-dimensional space. The first thing you'll think of is what Kodak Stereo can do for the pictures *you* especially want to take. And you'll be right. They'll be wonderful!



The Kodak Stereo Camera only $84.50

Probably the easiest-to-use precision camera you've ever had your hands on. Its designers thought of *everything*. It is beautifully balanced and its controls are so nicely located you can make finger-tip adjustments without changing your grip on the camera itself. Workmanship is really fine—the kind that makes an owner pretty joyful with his purchase. Here are operating details:

(1) Quick, simple loading. Lay film in position, close cover, wind. **(2)** No trick to exposure. Set shutter speed—selector automatically sets lens opening as you move pointer to light condition—"Bright," "Hazy," "Cloudy-Bright." **(3)** Zone focusing—Set scale on lens for "Close-Up," "Group," or "Scene," and lenses are quickly focused. Usual distance scale provided, too. **(4)** Matched, Lumenized *f*/3.5 lenses for sparkling color slides. Accurate shutter with speeds to 1/200; synchronized for all popular midget lamps. **(5)** Scopesight viewfinder. Precisely centered, frames subject exactly as you'll see it in picture. Spirit level shows when camera is exactly horizontal. Other automatic features include film advance which prevents double exposures, stops at next picture, counts each exposure, cocks shutter. And the price, $84.50, is extremely moderate for a precision stereo camera.



Kodaslide Stereo Viewers

Model II (above, right) has fine 2-element lenses; brightness control; focusing knob; adjustable eyepieces; plugs into house circuit. $23.75. Model I has single-element lenses; focusing knob; adjustable eyepieces, is battery operated. $12.75.

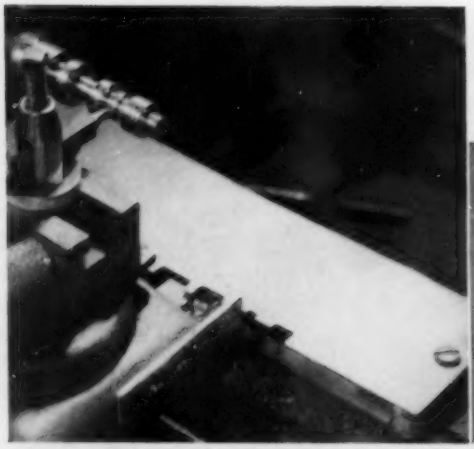
Kodachrome Film (K335 for daylight, K335A for indoors) is especially designed for stereo cameras. Takes 20 standard 23 x 24mm stereo pairs; is returned mounted, ready for viewing.

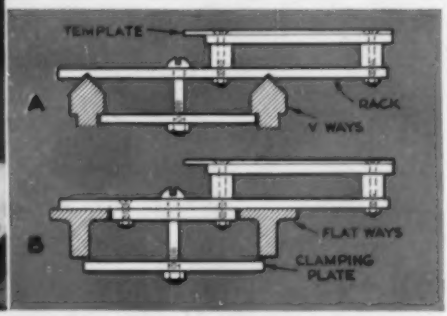
Prices are list, include Federal Tax where applicable, and are subject to change without notice

Kodak

Eastman Kodak Company, Rochester 4, N. Y.

NEW Shop Ideas



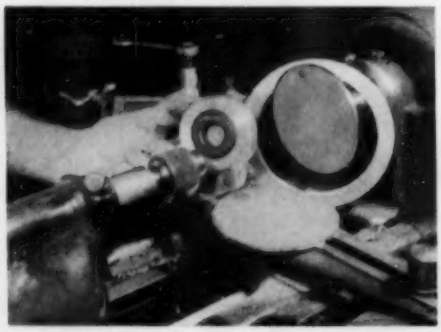


Template Speeds Turning Duplicates. Identical pieces can be turned in quantity by using a template on the lathe. File it accurately to the required profile from sheet metal.

Mount the template by bolting it to two heavier strips, with spacers that will hold it high enough above the ways to let the saddle pass beneath. File the supports as at A in the drawing to fit V ways, or add a step block to fit between flat ways as at B.

Drill and tap the side of the cross slide for two screws to attach the follower or finger at template height. File or grind the end of the finger to the exact shape of the tool bit used.

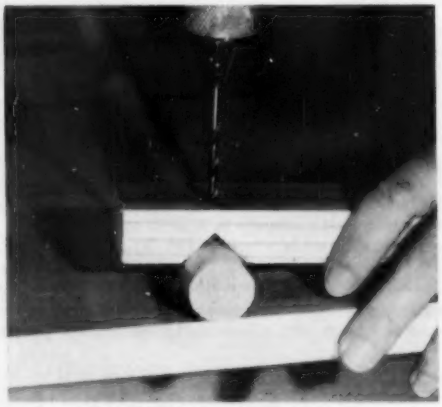
Set the compound rest parallel to the cross slide. With the compound feed, adjust the tool to turn one neck or shoulder to exact diameter. Then use the cross slide only to follow the template.—*J. M. Finn, Pittstown, N.J.*



Pad Helps Turn Rings. With a simple live-bearing pad to clamp flat stock against the faceplate, you can turn rings, disks or washers. A fine-grit abrasive disk cemented to the faceplate provides enough friction grip for driving the work.

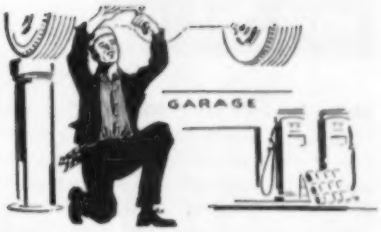
Find a scrapped ball bearing whose inside race fits the nose taper of the tailstock chuck or that of the dead center. Turn the pad body from aluminum or other stock thicker than the bearing. Bore a blind recess to a drive fit for the outer bearing race. —*H. L. Luckett, San Antonio, Tex.*

V Jig Centers Dowel Hole. It's hard to drill a dowel right on diameter by hand, but comparatively easy to drill a wooden V jig to do it. Cut a symmetrical notch in one face of a piece of 1¼" or heavier stock. Square a line from the point and drill a vertical hole through the apex of the V. Then place the notch over the dowel and drill away, as shown below.—*Frank A. Javor, North Bergen, N.J.*



 Please turn to page 240 for more shop tips

Put your skills to work



Young men who are interested in mechanics, electronics or other technical specialties have an interest in the U. S. Air Force. As an Airman, you may have an opportunity to develop your technical ability and learn an interesting, exciting, and good paying skill. Act today and put your skills to work tomorrow. Put them to work where they'll do the most good...put your skills to work in the U. S. Air Force.

You go places–*faster* in the U. S. Air Force

You may train with the U. S. Air Force in one of these interesting specialties

AIRCRAFT MAINTENANCE
ATOMIC WEAPONS
COMMUNICATIONS
CONSTRUCTION
GUIDED MISSILES
ROCKET PROPULSION
TRANSPORTATION

STUDENTS—Graduate before you enlist

M-4-PS

Personnel Procurement Division
AFPTR – P-4 U. S. Air Force
Washington 25, D. C.

Please send me more information on my opportunity as an Airman in the U. S. Air Force.

Name..... Age.....

Address .....

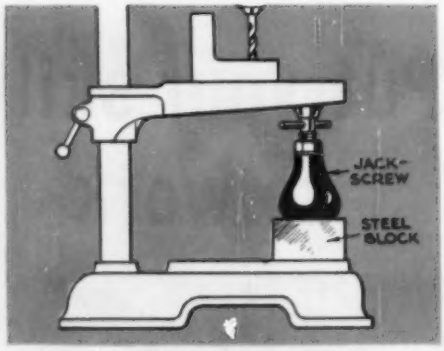
City..... Zone... State.....

MORE SHOP TIPS

Make Screws from Nails. When you need an outsize length of screw in a hurry, you can often make it by threading a common nail. Nail diameters are surprisingly similar to those of ordinary screws, and their tensile strength is ample for most uses. The following table shows corresponding nail and screw sizes.

Nail	*Nail Length*	*Screw*
3d	1¼"	No. 2
6d	2"	No. 4
8d	2½"	No. 6
16d	3½"	No. 8
20d	4"	No. 10 or 3/16"
50d	5½"	¼" bolt

If the nailhead will not serve for the screw, cut it off, thread both ends, and use a nut on each.—*J. G. Jarvis, Webster, N.Y.*

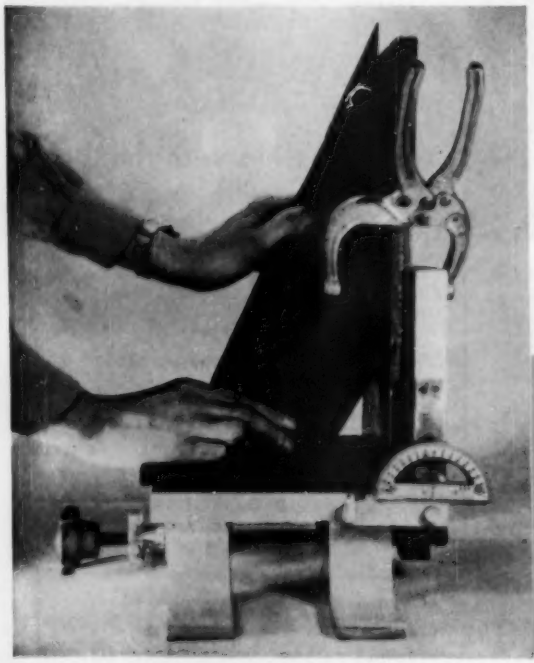


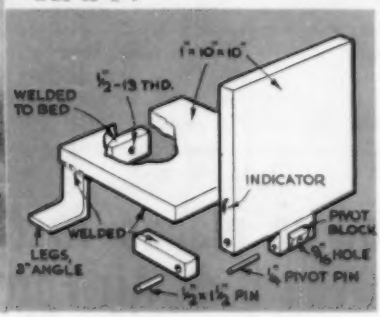
Jackscrew Braces Drill Press. When drilling or counterboring big holes on a light drill press, it's wise to take the strain off the table. A jackscrew or even a heavy cap screw and nut placed under the front end will prevent cocking and may save you from cracking the table casting. Use blocks or packing under the jack if necessary.—*Frank La Saracina, NYC.*

Jig Positions Angle Welds. Heavy plates fixed in this jig are held at accurate angles for welding. Used at the Temco Aircraft Corp., Dallas, for making aircraft-construction jigs, it has been found to save five man-hours per unit on this type of work.

Jig builder Woodrow W. Keas, who devised the gadget, hinged bed- and backplate at one end with ½" dowel pins and welded on feet cut from 3" angle. A long ½" bolt threads into a plate welded under the front of the bed. It turns free in a pivot block pinned to the backplate, but is held against endwise movement by double nuts front and back. This bolt adjusts the jig angle. It is locked at the front by a star nut.

The angle is set by referring to a protractor fixed on the bedplate (visible in the photo at left). The two plates are clamped on, tack-welded, and then removed for final welding. Parts so fabricated are true to 1°.





Reading time: 3 minutes to learn how to

- **cut engine wear up to 38%**
- **prevent loss of power, compression**
- **save 15%-25% on oil . . . without ever changing your oil filter**

This Gadget is Worth $320,000,000

...and I Discovered it by Accident!

by Albert Wells

IT ALL STARTED the day I got the bill: $214.36 for an engine overhaul—and I had only 28,000 miles on the car!

I told my troubles to a neighbor—a lubrication engineer—told him how I'd always changed oil every 1500 miles, changed filters every 5,000 miles. His answer floored me.

"You've been wasting your money," he said. "We've spent millions developing oil additives that keep carbon, gum and abrasives from damaging your engine. Your oil costs about 15¢ more a quart because of those additives. Yet oil filters on the market today are made of rag or paper—they soak up additives like a blotter. The more often you change oil filters the more money you waste!"

"But don't I need a filter to take the impurities out of the oil?" I asked.

He took a deep breath. "This will really shock you. Engine damage is done by abrasives 10 to 40 microns in size (a micron is .000039"). Your oil filter can't take them out because rags or paper can't be packed tight enough without stopping oil flow when the fibers soak up oil and expand."

"Isn't there any kind of filter that does the job it's supposed to do?"

"No, except for the porous bronze filters they're making for supersonic aircraft. And you can't buy a filter like that for your car."

I asked myself: "Why not?" Next day, I tracked down the outfit that was making the filters for aircraft, and got the answer. These porous bronze filters were made by fusing together millions of tiny bronze balls. Non-absorbent, they didn't remove additives, yet they removed abrasives in the 10-to-40 micron danger zone. Could they be made for automobiles? Again, the answer floored me.

LIFETIME FILTER TESTED IN CARS, TRUCKS, BOATS

Test models had already been used in cars and trucks for millions of miles, proving the porous bronze filter: 1. Never needs replacing. 2. Saves the quart of oil thrown away with ordinary filter packs. 3. Increases engine life.

Trouble was, almost the entire production was being absorbed by military and industrial users.

That day I went to work on the biggest job of my life: setting up production of the Lifetime porous bronze permanent filters for cars and trucks (an estimated $320,000,000 replacement industry).

HOW TO GET A LIFETIME FILTER FOR YOUR CAR

Try the Lifetime filter on your car for 2 weeks: if it isn't all I say, you get your money back; if you keep it, you're through buying filter packs—the Lifetime filter is guaranteed for 10 years, actually will last many times that long.

For complete unit, including case (fits any car), send make, year and model of your car and $12.95 (we pay shipping).

Conversion kit, which replaces your present filter pack with Life-Time bronze, is $6.95 for most cars (send make and number of present filter when ordering). Conversion kits for Buicks with hydraulic lifters and for cars with full flow systems: $13.95.

Or send only $2 deposit, pay C.O.D. charges on arrival. But do it today—don't waste another cent on filter pack replacements!

Complete Lifetime Filter; fits any car.

Lifetime Conversion Kit; replaces ordinary packs with permanent bronze element.

OPPORTUNITY FOR DEALERS AND DISTRIBUTORS

A dealer and distributor network is now being formed to handle demand generated by advertising and editorial features in national magazines. If you can qualify, you can be first with the most exciting automotive product of this decade, to win new customers and build a substantial business. These valued franchises are not being sold; they are awarded on the basis of ability to grow with us. For complete details, write or wire: Continental Manufacturing Corporation, Dept. FPS-14 Washington Blvd. & Motor Avenue, Culver City, Calif.

©1954

Permanent Filter Division, Dept. FPS-14
CONTINENTAL MANUFACTURING CORP.
Washington Blvd. at Motor Ave., Culver City, Calif.

Ship ☐ complete unit for_____
make, model, year of car

☐ conversion kit for_____
make and number of present filter

I enclose ☐ $12.95 for complete unit ($18.95—chrome)
☐ $6.95 for conversion kit (full-flow, $13.95)
☐ $2.00 deposit; send C.O.D.

Name_____

Address_____

City_____ Zone____ State_____

He Runs a Shipyard for Amateurs

[Continued from page 186]

a design, and he makes sure that you know what you are undertaking before you spend a dollar.

Then he "lofts" your boat. This is a kind of oversize drafting operation, with sheets of plywood laid out on the floor for marking with lines and offsets. With this ticklish part done, the cutting and fitting go together with far less chanciness.

A middle-sized, sandy-haired man with a determined jaw, Sam Thurston has been building or shipping on boats all his life. Among other things, he holds a chief engineer's ticket and a mate's license. He was a design engineer at a big shipyard when the do-it-yourself barnacle fastened on him.

Beginnings. It took two years of planning and dickering to make Trident a reality. Thurston leased a building on the waterfront. He arranged to become a dealer for boat kits. He scouted out sources of supply for plywood, lumber and hardware. With help from Grone, he built equipment. Then he ran a few advertisements.

His first customers provided a shock. He'd expected that they'd mainly want to assemble kits, and that the craft would be mostly 14- or 16-footers. But as each prospective customer got to figuring, up went his sights. The result is that almost without exception they began toiling away at 21-, 24- or 28-footers, built from scratch.

Right now Sam is steadily turning away people whose notions in the 40-foot class are too big for Trident's facilities. He is toying with the notion of roofing over an area for such homemade monsters. But he's holding back, on the theory that the best customer is one who bites off something he can swallow in a reasonable time.

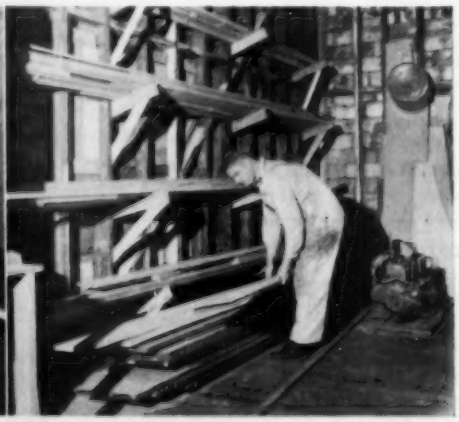
Prints and patterns. Thurston offers a choice of blueprints for builders who haven't already fixed on a design. He's also working up what promises to be a big timesaver: a line of permanent plywood patterns for a few popular craft. These will get builders off to a fast start.

When you sign up to use space at Trident, you agree to pay a dollar an hour for the time you work on your boat, and another 50 cents an hour if you bring along a friend as helper. You also agree to pay for a stipulated minimum number of hours a month. This increases with the amount of space your craft takes up, and runs to between 60 and 100 hours monthly for big boats.

You settle up as you go on a weekly or monthly basis, also paying for any mate-

[Continued on page 244]

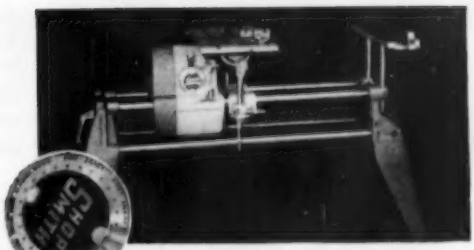
PUTTING IN SCREWS, a large part of boatbuilding, is speeded by power. Each customer gets electric drill with a screwdriving attachment.



RACKED LUMBER of the right grades is always there when a builder wants it. Thurston takes pains to anticipate what each boat will need.

The best tool for every job

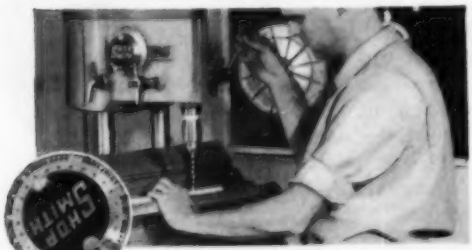
*and you can dial them all with SHOPSMITH**



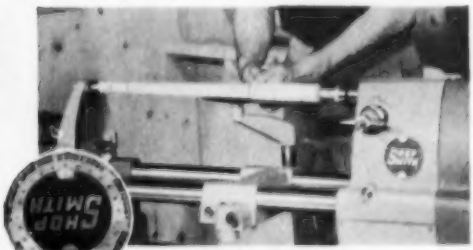
Saws! Speed-Dial settings for precision cross-cutting, ripping, dadoing, molding. 9" circular saw. Big tilting table. 48" blade-to-fence. Cuts 2½" lumber—even at 45 degrees.

Sands! Correct speeds for coarse, medium, fine sanding of plastics, metal, all woods. Big 12" sanding disc. Depth control dial and built-in jigs for *exact* duplication of work.

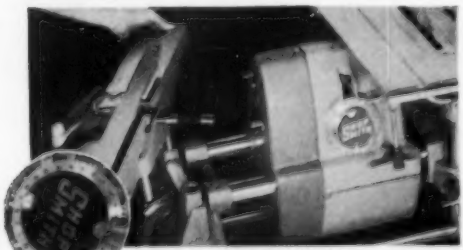
Bores! The only precision horizontal drill made for home shops! Unlimited capacity in horizontal plane. Speed-Dial settings for large diameter boring, dowelling, routing, shaping, etc.



Drills! Speed settings (700 to 5200 r.p.m.) for every operation from heavy drilling to high-speed routing. Drills wood, metal, plastics to center of 16½" circle. 58" chuck-to-floor. 26" chuck-to-table.



Turns! Infinitely variable speed control with Speed-Dial for turning complete range of diameters. 16½" swing. 34" between centers. Tool rest slides parallel to work without constant readjustment.



Exclusive POWER-MOUNT for quickly adding *jigsaw, jointer, compressor.* Another SHOPSMITH first! Add SHOPSMITH accessory tools with one twist of a handle. Power-Mount makes your SHOPSMITH a saw-jointer, jigsaw-sander, etc., with infinitely variable Speed-Dial settings.

See the all-new SHOPSMITH demonstrated at your local hardware or Montgomery Ward store. It's America's largest selling stationary power tool complete with rugged ¾-hp. motor, bench, chrome rust-proofing . . . **$289.50**
(Comparable individual power tools with benches and motors would cost $600!)

*Trademark Reg. U.S. Pat. Off. and in foreign countries

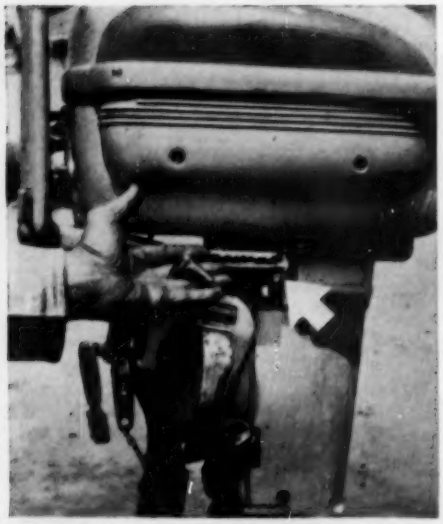
MAGNA ENGINEERING CORPORATION
Dept. 294-A at factory nearest you:
12819 Coit Rd., Cleveland 8, Ohio, OR
Menlo Park, Calif.

Please send me 2 FREE BOOKS—24-page booklet, "What to Look for When You Buy Power Tools," and 20-page illustrated SHOPSMITH catalog.

Name _____

Address _____

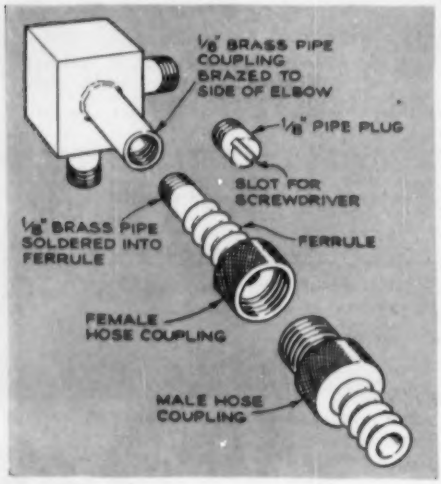
City _____ *State* _____



Fitting Aids Outboard Flushing

I HAVE found that this fitting makes it easy to use a garden hose for flushing a 14-hp. Evinrude Fastwin engine after a salt-water run. Remove the brass elbow (arrow) and braze a ⅛" brass-pipe coupling to its flat side. Then drill a 5/16" hole through the elbow wall inside the coupling. A piece of ⅛" threaded brass pipe soldered into the ferrule of a ⅝" garden-hose fitting makes the connection.

A ⅛" pipe plug, well greased to prevent sticking, closes the flushing opening when the motor is in use.—*Clinton R. Hull, Costa Mesa, Calif.*



He Runs a Shipyard for Amateurs

[*Continued from page 242*]

rials you have bought from Trident. You are free to buy your materials anywhere you like, but all customers so far—after a few costly buying expeditions on their own—have concluded that it's cheaper and simpler to buy through Sam.

The customer records his own time and materials used. "Nobody cheats," Sam says. "And if anybody loses track, I can pretty much tell what's gone into the boat since the last reckoning."

Sam's wife Alexandra, who is an experienced auditor and accountant, does the billing, ordering and other paper work. A friend to all the builders, she also sees to it that the coffee pot in the shipyard is kept filled and hot.

Trident is open every day in the week from noon until nine in the evening.

Mistakes. Launching a brand-new business almost inevitably involves misfiguring. Sam originally began with a slightly lower hourly charge. "I didn't really understand that I was working with amateurs instead of shipyard workers. The first time you see a costly tool slung around by the power cord it really hurts. Or a dull tool bit whacked down to half its size just because there's a grinder handy.

"I fretted something awful for a while. Then I just raised the hourly rate to a buck—and quit stewing."

Trident is now a paying proposition for Sam Thurston. But how is it working out for the customers?

The first man to get into the water is now contentedly fishing from his boat, a 16-foot cruiser. It took nine weeks a-building, and cost $105 in yard fees and $490 for materials. For a modest job—say a 14-foot skiff suitable for a 7½-hp. outboard—Sam guesses that materials might total about $70. Yard time for a man of average skill might come to around 30 hours. This adds up to a hundred bucks for a boat that might cost $215 in the showroom. The savings on the big cruisers are hard to nail down exactly but both Sam and his customers are sure that they are substantial. END

AC brings you the HOTTEST news in SPARK PLUGS

Exclusive BUTTRESS-TOP insulator design!

1 Provides a longer path of resistance to electrical leakage than any other make of spark plug. This is the much discussed electrical "flashover" length. Under unusual dirt or moisture conditions, this buttress-top design greatly reduces "shorting" or "flashover."

Exclusive COPPER-GLASS seal!

2 In AC Spark Plug manufacture the center electrode is sealed in the insulator by a *patented* copper-glass seal. This seal, comprised of powdered copper and glass, heated and compressed, is gas-tight, and the mechanical bond is more than equal to any condition of use. The seal is resistant to heat shock and vibration far beyond normal plug life.

Exclusive HOT TIP feature!

3 Not only did AC develop the modern ceramic insulator material that outmoded porcelain—AC engineers found a way to form this material into long, thin, recessed insulator tips. These tips heat up faster to burn away combustion by-products that would foul ordinary plugs. The HOT TIP plug is an AC *exclusive.*

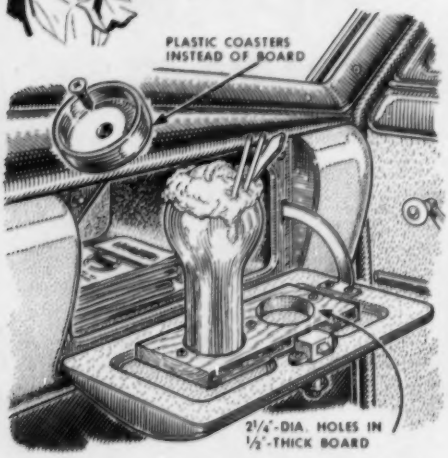
AC SPARK PLUGS

GM GENERAL MOTORS

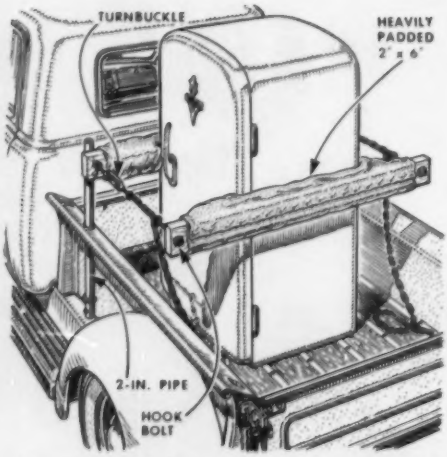
AC SPARK PLUG DIVISION
GENERAL MOTORS
CORPORATION

GM and AC means continued leadership

Hints FROM THE MODEL GARAGE



Balancing a soda glass while stopping for a roadside snack is no problem if you adapt the glove-compartment lid with a holder made from scrap wood. Deep-rimmed plastic coasters serve as well if attached with flat-head sheet-metal screws.



Heavy, padded braces at front and back prevent slipping and scuffing when you move a partial load in a truck. Link the holding chains as taut as possible to the free-riding rear brace, then tighten with the turnbuckles to hold the load fast.

Two screwdrivers, with the handle of one used as a fulcrum, provide the leverage you need to start a stuck oil-filter refill without yanking off the wire handle. Take care not to nick the sealing seat of the housing, or leakage may result.

Bumper and grille protection when you are called upon to push—or need pushing—is carried in your trunk with a guard made from a short length of stout lumber. Bend and bolt on the steel straps so that they fit loosely over the bumper guards.

Please turn to page 248 for more auto hints

"How we engineered this new Chevrolet for smoother going and 'heads up' stops"

By Ed Cole, Chevrolet Chief Engineer

A *Brutal Belgian-block roads condense years of wear into days.*
B *Special device measures amount of front-end "dive" under hard braking.*
C *Spherical-joint front suspension has only 4 grease points instead of 16.*

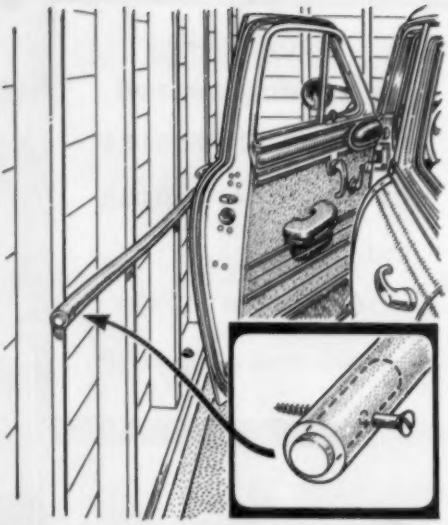
To give Chevrolet's new Glide-Ride front suspension its uncanny ability to sop up small, sharp road vibrations (as well as larger bumps) we had to create a really *free-flexing* unit. We completely eliminated all metal-to-metal friction so that the springs could react instantly to the smallest jolts. That's why the control arms are set in live rubber . . . and even the spherical joints themselves have non-metallic bearing inserts.

Spherical joints gave us other advantages—much less bearing area, so steering friction is minimized; reduced unsprung weight, so riding comfort is increased—and they also let us develop the exclusive Anti-Dive braking control, which drastically reduces that annoying nosing-down of the front end. There are scores of other advances in Chevrolet's new ride—but the *result* is what counts, and you can test that at your Chevrolet dealer's. . . . Chevrolet Division of General Motors, Detroit 2, Mich.

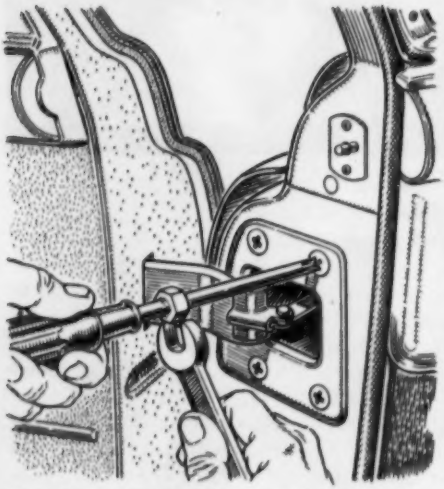
CHEVROLET

MORE Hints from the Model Garage

Rubber padding in the socket joint of the hitch will give you a nonrattling coupling that won't click and jerk when you pull a light trailer. Just lay a square of old inner-tube rubber on the ball before dropping the hitch on it.



Discarded garden hose used as a bumper on your garage wall protects the car door when you open it to get in or out. Drive a short dowel in each end and drill for a mounting nail or screw. Use a concrete nail or expansion bolt in a masonry wall.



Turning a screwdriver while tightening or removing a door hinge can be made easier if you braze a nut on the shank near the handle. Then put pressure on the end of the screwdriver and do the turning with a small open-end wrench.

Model-airplane dope or fingernail polish will cut down annoying glare from dash lights. Simply dip the bulbs in the red dope and let dry. Then, checking as you work, start at bottom and gradually scrape off coating until light level is just right.

Texaco Tips On Car Care

←Good uses for last winter's anti-freeze

If you have Texaco PT Anti-Freeze in your car radiator, you can put it to good use after it is drained out this spring. It makes an excellent preservative solution for storing wet paint brushes overnight or for short periods of time. It helps prevent rust when smeared on your car bumper and grille.

How to get→ that "cushiony" ride

To ride smoothly, your car needs a lubricant that lasts. That's *Marfak!* Note the protective "collar" of *Marfak* on the front suspension (at right). *Marfak* stays on the job far longer. It's extra-stretchy...forms a tough coating between points of wear and friction. With *Marfak,* you get a *cushiony* ride that lasts for 1,000 miles or more. And remember this: your Texaco Dealer lubricates your car by chart, never by chance. Today, get *Marfak* lubrication. See your Texaco Dealer . . . *the best friend your car has ever had.*

TEXACO DEALERS IN ALL 48 STATES

Texaco Products are also distributed in Canada and in Latin America

THE TEXAS COMPANY

TUNE IN: TEXACO STAR THEATER starring DONALD O'CONNOR or JIMMY DURANTE on TV Saturday nights.

[*Continued from page 158*]

song of the exhaust. They drove 10 miles, 20.

"I guess you fixed it all right," Barney commented. "I knew you would."

"I hope so," Gus said, trying to sound confident.

Engine Sings a New Song

They came to the long, climbing slope of the Big Hill road, and were nearly to the top when Gus sensed a new sound developing in the motor. It wasn't something that he could instantly put his finger on, yet it seemed to him that he should be able to. It was a familiar yet momentarily elusive change in motor tone.

"Something wrong, Gus?" Barney asked quickly.

The words had hardly left his mouth when the car slowed, seemed to lose its power. Gus jiggled the throttle, watching developments warily. The motor began to miss and stagger, and the wagon barely made the summit of the rise. Gus pulled to the side of the road and leaped out, just as the engine gave one last gasp and died.

The burly mechanic looked ruefully at Barney, became very preoccupied with fumbling his pipe from his pocket, tamping it with tobacco with a horny thumb. He lit a match on the seat of his overalls, puffed reflectively.

"Nice view of the valley from here, isn't it?" he remarked.

Gus Takes Time Out

He seemed to be completely absorbed with the view, yet his mind was racing. He'd be hornswoggled, he told himself, if he'd lift that hood and make any more of a fool of himself before this kid, until he had some idea of what he was looking for. He'd checked and rechecked everything that could possibly cause trouble. There was nothing he could do but putter around like a jay bird, until he got a new slant on this deal.

Gus chewed thoughtfully on his pipe. That change in motor tone before the engine started missing had been as familiar to him as the sound of running water . . . What was it, anyway? By golly, it had sounded as though the motor was choked.

Quickly Gus removed the air cleaner and peered into the carburetor's throat. The choke was wide open. Gus checked it with his fingers—there was no doubt about it. What now? Air cleaner? But he had cleaned and checked that thoroughly. Still, the suspicion of a choked motor, once firmly established, persisted in Gus's mind. He removed the top of the air cleaner, lifted out the felt. The piece of felt seemed somehow off base, too limp and floppy.

"Where did you get this felt, Barney?" Gus asked.

"I cut it out myself," Barney said, "from a piece we had around."

Air Cleaner Gets a Strangle Hold

"Ah!" Gus's exclamation held a note of disgust. "I should have noticed this when I cleaned the air cleaner," he declared. "Guess I'm getting addled in my old age. But both times you drove into my shop, you'd driven only a few blocks. The motor was still fairly cool, the felt fairly stiff. When this felt gets really warm it gets limp. It sags down and shuts off the air from your motor. No wonder the motor sounded choked to me and you got such poor gas mileage. We'll put in a factory-spec felt, and your troubles are over, Barney."

They *were* over. A week later Barney drove into the garage and announced no trouble. Moreover, he said with a happy grin, the station wagon was doing about 21 miles to the gallon.

"Goes to show," Gus told Stan Hicks, "that a man can't pinch pennies in the wrong places. It doesn't pay. It didn't pay for Barney Overholtz, and that's for sure."

"Yeah," Stan Hicks said disgustedly. "You really made him pay, didn't you. Two dollars, wasn't it?" END

NEXT MONTH: Gus rescues a competitor.

THIS IS MOPAR CAR-CARE MONTH!

NOW - RESTORE "NEW-CAR" INTERIOR BEAUTY EASILY - FOR ONLY $2.15*

Amazing new MOPAR KAR KLEEN removes stains, spots, and dirt like magic!

New MoPar KAR KLEEN brings back the beauty of your car's interior quickly, easily, magically. It removes stubborn stains and dirt from upholstery, headliner, visor panels, etc.—whether the materials are cloth, vinyl, or leather! *Everything* can be cleansed and beautified by MoPar KAR KLEEN. One bottle provides more than enough—and you need only a small brush or sponge to do the job!

MoPar Ru Glyde

will spark up your car's appearance by restoring that new look to rubber floor mats, tires, and rubber accessories! Ru GLYDE will do the job with less effort and at lower cost.

ONLY $.65*

MoPar Cleaner and Auto Polish

combine to maintain gleaming exterior beauty. Simply clean exterior with MoPar Cleaner, then beautify in a jiffy with today's finest Auto Polish!

CLEANER ONLY $.70*
POLISH ONLY $.65*

MoPar Radiator Rust Resistor

protects your cooling system against damaging rust and scale. Deposits a protective coating throughout the cooling system. Recommended for any make of car.

ONLY $.50*

MoPar Chrome Polish

will restore brilliance and luster to the chrome parts of your car! Removes rust, corrosion, and tarnish . . . leaves a durable film which protects finish!

ONLY $1.00*

MoPar Lustur-Seal Haze Cream

provides a hard, protective coating that preserves the color and gloss of new or old cars.

ONLY $1.25*

MoPar Paint Applicator

touches up scratches in seconds! Stops rust before it can start . . . for cars, refrigerators, and stoves! Available in more than 100 colors, including white.

ONLY $1.00* each

. . . all these materials are available from your nearby Plymouth, Dodge, DeSoto or Chrysler dealer and from better repair shops everywhere.

*Factory Retail Price At Factory

MOPAR is the identifying name of thousands of parts and accessories designed and built especially for your Plymouth, Dodge, De Soto, Chrysler or Imperial car, or Dodge *"Job-Rated"* truck.

MOPAR

PARTS DIVISION • CHRYSLER CORPORATION • DETROIT 31, MICHIGAN

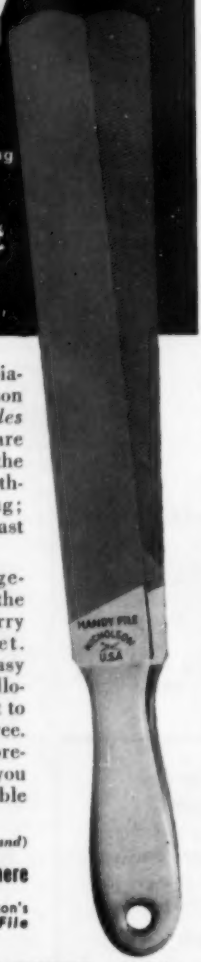
EVERY SKILLED CRAFTSMAN, MECHANICAL HOBBYIST AND DO-IT-YOURSELFER SHOULD HAVE THIS NICHOLSON

HANDY FILE

Special low price during HARDWARE WEEK April 15-23

only 60¢

(Regularly 76¢)



Like those inseparable Siamese twins, the Nicholson HANDY FILE is *two files in one.* Either or both are always at hand . . . in the single-cut side for smoothing and edge sharpening; the double-cut side for fast stock removal.

Flat forged-on orange-colored handle makes the HANDY FILE easy to carry—in hip or leg pocket. Hang-up hole makes it easy to store and find. Cellophane wrapping brings it to you rust-and-moisture free. Made by the world's foremost file manufacturer, you can be sure it is unbeatable in long-lasting quality.

(Also made in Black Diamond brand)

At hardware stores everywhere

FREE new edition of Nicholson's famous 52-page book, "*File Filosophy.*" Write to

NICHOLSON FILE COMPANY
19 Acorn St., Providence 1, R. I.

(In Canada: Nicholson File Company of Canada Ltd., Port Hope, Ontario)

NICHOLSON FILES FOR EVERY PURPOSE

Science Arms You Against Snake Bites

[Continued from page 162]

try without antivenin, there are a number of important precautions to take.

Wear good, stout leather boots, at least 14 inches high, and long trousers. Then, if a pit viper takes a dive at one of your ankles, its fangs and venom will be buried in your trouser leg instead of you. Wearing sneakers and shorts simply makes matters easier for snakes.

Make your camp before sunset. Snakes are most active after dark, and their favorite hangouts are under brush piles, rocks and logs. Hunt for your firewood while there is still light enough for you to see where you are putting your hands.

Look Before It Leaps

Don't slide your fingers under chunks of wood. Take hold of them at the top and lift the far side first. If there is a snake underneath, it will strike in that direction, and thus away from you.

Remember that a snake doesn't have to be coiled to strike. It can lash out from any position, in any direction. Also, a rattler doesn't always sound a warning. Its rattle may have been broken off in a family fight or an accident.

Never reach into a hole in the ground or into a tree or log without first probing with a long stick.

Don't sit down on a log or rock, or slide a leg over either, without a sharp preliminary glance.

Don't walk close to rock ledges. Snakes love to hide there, and might dart at your head if it comes too near.

You Can Outrun a Snake

If you suddenly see a wicked-looking snake near you, don't be paralyzed with fright. A snake can't strike with accuracy farther than a little over half its length. Besides, you can sprint 15 to 20 miles an hour. The best a rattler can do is two or three, and a coral snake can't even slither one mile an hour.

You can identify a pit viper by its flat, triangular head; oval, catlike eyes; and its prominent pits. A coral snake has

[Continued on page 254]

The New History-Making

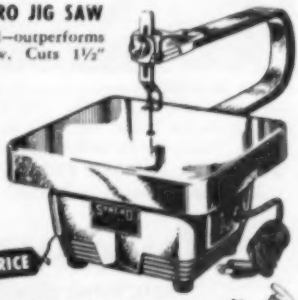
SYNCRO 2500

TILT ARBOR JIG SAW

DO-IT-YOURSELFERS! Here's the most important news in jig saw history! Syncro announces a heavy-duty jig saw featuring complete arbor tiltABILITY (first *ever!*)—20" throat clearance—180 sq. ins. table working surface that remains rigidly level for more accurate, easier sawing and lumber handling. Blower. Self-powered by SUPER-powerful, patented reciprocating motor built in and guaranteed against burn-out during your ownership. Industrially-rated. Weighs 65 lbs. Low cost. See it at stores—send coupon for Free Catalog—*before* you buy *any* jig saw!

NEW No. 208 SYNCRO JIG SAW

Basic do-it-yourself tool—outperforms any competing jig saw. Cuts 1½" pine, 1" plywood, aluminum, plastic, linoleum. 15" Throat clearance; 100 sq. ins. table. Arm swings 90° for any length cut. Same type self-powered motor as 2500. Low cost. See at Stores—Send coupon.



Remember!

MORE LOW PRICE SYNCRO-MADE JIG SAWS HAVE BEEN SOLD THAN ANY OTHER SELF-POWERED MAKE!

SYNCRO CORPORATION, Dept. 2-45, Oxford, Michigan, U.S.A.

MAIL COUPON

SYNCRO Corporation, Dept. 2-45, Oxford, Mich.

Send Free Sanding Handbook and Catalog of Syncro Jig Saws and Sanders—Low Prices.

NAME_____

ST. & NO._____

CITY_____ STATE_____

Make your home look like new INSIDE and OUT with low-cost* Weldtex

Easy to apply...deep-grooved surface hides joints and nails.

BEAUTIFUL Weldtex panels on 8′ x 12′ wall with real wood for only $27*. Put easy-to-handle 4′ x 8′ sheets right over old wall. Stain it, paint it or finish it natural.

GIVE CEILINGS, walls new and dramatic beauty with Weldtex squares. Cover a 12′ x 15′ ceiling with 12″ or 16″ pre-cut squares for approximately $50*.

EASILY APPLIED Weldtex exterior paneling harmonizes with any architectural design, takes stain or paint beautifully. Panels 4′x 8′ cost 33¢* a sq. ft.

*Prices very slightly in different areas

SEE YOUR LUMBER DEALER
for literature, displays and prices

Weldwood®
REAL WOOD PANELING
United States Plywood Corporation
WORLD'S LARGEST PLYWOOD ORGANIZATION
Weldwood Building, 55 W. 44th St., New York 36, N. Y.
and U. S.-Mengel Plywoods, Inc., Louisville, Kentucky

Science Arms You Against Snake Bites

[*Continued from page 252*]

round eyes, but if you are not close enough to make sure of their shape (heaven forbid!) you can't mistake the snake's flamboyant red, black and yellow stripes.

If, in spite of care and caution, you have the bad luck to be bitten by a poisonous snake, don't take a swig of whiskey to calm your fears. One of the oldest bits of bad advice in circulation is that hard liquor is a remedy for snake bite. It might put you in a cheerier frame of mind to die, but hastens that end rather than staving it off. It speeds up your circulation and thus spreads the venom faster than otherwise.

Standard procedure, if you don't have antivenin with you, is first to apply a

Before a man starts climbing the ladder of success it helps to pick the right girl to stay on the ground and hold it steady for him.

—THE SIDEWALK SUPERINTENDENT

firm but not too tight tourniquet about two inches above the wound. Then cut an X about a quarter-inch deep where the fangs pierced your skin, and apply suction.

One fast-thinking victim was struck by a Florida diamondback rattlesnake within a few feet of his car. He disconnected one end of the vacuum tube leading to the windshield wipers, started the engine, held the tube to the wound and removed the venom most efficiently.

First-aid measures are strictly for emergency treatment, of course. It is essential that you get to a doctor as soon as possible, but don't run. That will stimulate your circulation faster than whiskey.

If you only lived in Iceland, Ireland, Chile, New Zealand, Madagascar, Cuba, Jamaica, Puerto Rico, Haiti, the Azores, or in the Polynesian, Canary, Orkney, Shetland or Cape Verde Islands, you wouldn't need to give poisonous snakes a thought. There aren't any there. END

Now! SKIL Professional Builders Saws at Homeowners' Prices!

Now! 6½" SKIL Builders Saw!

With this extremely lightweight new SKIL 6½" Saw you can cut dressed 2 x 4's at a 45° angle. Easy, fast cutting in any position. Has high-speed blade (6500 r.p.m.), heavy duty motor with die-cast housing. All ball and needle bearings. Quick setting depth and bevel adjustment.

Now you can have the real thing—a genuine professional carpenter's power saw at a price you would expect to pay for a home craft model.

These heavy duty SKIL Saws are *built* for builders. They have the ruggedness and handling ease that carpenters' saws must have for day-in, day-out use. They have the accuracy needed to hold down building costs. Yet SKIL prices them for every home-owner's pocketbook.

You can tackle any home building job confidently with a SKIL Builders Saw. It often will pay for itself on your first project. Build kitchen cabinets, furniture, whole rooms—even a new garage or porch—with professional results. Cut plywood panels, sheeting, siding, easily and speedily. You can even cut stone, metals or compositions with special blades.

Have your hardware dealer, appliance dealer or department store show you these SKIL Builders Saws today!

No other saws at anywhere near the price boast all these features!

Oversize Motor • Ball and Anti-friction Bearings
Built-in Bevel and Depth Adjustment
Telescopic Safety Guard • Trigger-type Switch
Sturdy Die Cast Aluminum Housing

3 Other SKIL Builders Saws to Choose From

1. VALUE SPECIAL

SKIL 6" Builders Saw. Model 526. Here's a perfect tool with professional features. Ideally suited to the handyman who does not need a larger saw. Lightweight, sturdy, ready for 101 jobs that need doing. YOURS at a saving that spells real economy **$49.50**

2. SKIL 7¼" Builders Saw

Same design as Model 552 illustrated above, Model 553 **$69.50**

3. SKIL 8¼" Builders Saw

Same design as Model 552 illustrated above, Model 554 **$79.50**

SKIL makes the most complete line of home and builders power tools. Every one of them offers you the very most—feature for feature—your dollars can buy! See them at your dealers or write for free literature.

SKIL
BUILDERS TOOLS

Made only by SKIL Corporation
formerly SKILSAW, Inc.
5033 Elston Avenue, Chicago 30, Illinois
2601 Dundas Street West, Toronto 9, Ontario
Factory Branches in All Leading Cities

YOU NEED THIS TOOL!

Milwaukee

SAWZALL

PORTABLE ELECTRIC HACKSAW

NOT AN ATTACHMENT

Buy A Complete HEAVY-DUTY Sawing Tool

USED BY PLUMBERS • HOME BUILDERS and REMODELERS • MAINTENANCE and SHEET METAL MEN, Etc.

- Does those extra-hard, tedious time-consuming sawing jobs . . . Fast and Easy
- Easy to handle — one hand operation — just 14½" long — weighs only 6¾ lbs.
- Needs No Starting Hole . . . in wood or comparable materials
- Powerful . . . Long Life . . . rugged 1/3 H.P. — 115 V Universal motor — Ball and roller bearings.

CUTS ANY SHAPE...Clean and Fast...Zips right through any sawable material including WOOD, METAL, FORMICA, PLASTIC, NAILS, WIRE, ETC.

Only $84.50 COMPLETE

WITH STEEL CARRYING CASE and ASSORTED SAWZALL BLADES

MILWAUKEE ELECTRIC TOOL CORP.

5306 W. State Street • Milwaukee 8, Wis.

Canadian Distributors: Matthew Moody & Son, Montreal

How to Wear Artificial Clothes

[Continued from page 115]

have to dry 'em out after use," he says.

Orlon, acrylic, Dacron, rayon and vinyl are what his other synthetic clothes are made of: his suits, an Eisenhower jacket, ties, handkerchiefs, underwear, shirts.

At home, he sleeps under Dynel or acrylic blankets of jonquil, blue or rose. (The dyeing of synthetics, long a problem, has largely been licked—hence those bright colors.) Irma, he says, has taken the blankets off the bed, laundered them in the automatic washer, dried them on an outdoor line, and had them back on the bed in two hours.

If he looks out his window, he looks past acrylic drapes ("they're rot-resistant") and may see Irma or his two daughters dressed in their orlon sweaters, synthetic mouton coats or their permanently pleated synthetic skirts.

His whole family, he says, has found that synthetic fabrics are soft, warm and easy to care for. There is no moth problem. They do not shrink. Some of the girls' sweaters stretched, but came back to size when washed.

He's All Done with All Wool

"I myself," Ben says, "would never buy another 100-percent wool suit, because of the ease of maintaining synthetics." The constant use of a coat hanger and occasional scrubbings in washrooms are, he feels, not burdensome.

But not all artificial suits have been good performers, and no one has more reason to know this than Bendigo.

One day he was walking to work with a high company official. The official was wear-testing a synthetic suit.

The day was cold, much static electricity was generated, and the electricity caused the man's pants legs to crawl up, up and up. He would take a couple of steps and jerk them down. They went right up again.

The official, a dignified gentleman who had risen to eminence via the financial side of the company, entered the

[Continued on page 258]

New G-E *All-Weather* Headlamps help you see through fog, rain, snow

Make night driving safer than ever before—good weather or bad!

GREATEST advance in night-driving safety since the first sealed beam headlamp. New General Electric *All-Weather* Headlamps help you see through fog, rain and snow. Make it easier to see the road against oncoming headlamps. Give 25% more light!

SAFER IN FOG

The photos at right, taken in simulated fog, show how much better you can see in fog, rain and snow with G-E *All-Weather* Headlamps. Regular headlamps (top photo) cause kick-back glare that obscures your vision. General Electric *All-Weather* Headlamps (bottom photo) greatly *reduce* kick-back glare.

MAKE THE ROAD EASIER TO SEE AGAINST ONCOMING HEADLAMPS

New G-E *All-Weather* Headlamps have a new reflector and lens that focus the light more effectively. Especially the low beam. It hits the road farther ahead and more to the right. It extends your seeing distance along the side and shoulder of the road up to 80 feet!

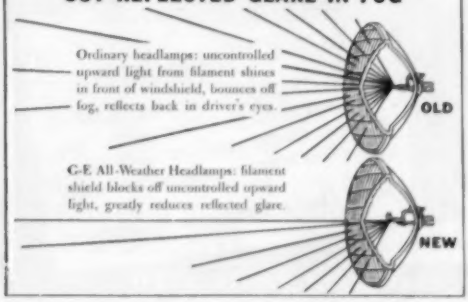
BOTH BEAMS MORE POWERFUL

5 extra watts added to each beam, plus more efficient filaments, give about 25% more light in the 6-volt lamp. It shows up obstacles that are out of range of ordinary headlamps.

You can't stop in time if you can't *see* in time. Why take chances? Replace ordinary headlamps with General Electric *All-Weather* Headlamps today! Most garages and service stations have them.

Photos of identical fog scene show difference in visibility between regular headlamps (above) and new G-E *All-Weather* Headlamps (below).

HOW G-E *All-Weather* HEADLAMPS CUT REFLECTED GLARE IN FOG



G-E *All-Weather* HEADLAMPS

6-volt PER PAIR

$3.60 plus nominal installation charge

12-volt **$3.80** PER PAIR

Progress Is Our Most Important Product

GENERAL ELECTRIC

How to Wear Artificial Clothes

[Continued from page 256]

crowded lobby of New York City's RCA Building with his trouser cuffs encircling his knees.

Other men had similar disasters with synthetic suits, particularly four or five years ago when the first ones came on the market. But the static headaches and other difficulties are largely things of the past, Ben says, and you are much, much safer in synthetics than you once were.

Combinations Are Best

Trouble with the official's suit, Ben says, is that it was 100 percent of a single synthetic. Ben recommends that you buy a combination: a synthetic-and-wool, a synthetic-and-cotton, or two synthetics. Buy a known label, he suggests, from a known clothier, and you'll be as safe as when buying any other fabrics. Ben advises you not to try to learn all there is to know about synthetic materials. They change too fast, he says, and what you learn about them today may be useless tomorrow.

Because of the progress that has been made in artificial clothes, Ben thinks that he is only the first of a race of Americans who will dress entirely in synthetics.

He points out that synthetics this winter invaded men's heavy overcoats and winter suits, and that Pellon liners and pads for the first time made men's heaviest winter clothing completely washable.

"It is," he says, "only a matter of time till all-wool suits are as rare as they are common today." END

Quiet, Please

Boss: "I invite you to place your ideas in this suggestion box—I want this shop to run so that whenever I walk in I will find every man on the job."

When the box was opened the next day, this suggestion was found: "Don't wear rubber soles."—*Youngstown Merchandiser.*

Buy EVANS for

EXTRAS

in 6, 8, 10 and New 12 Foot

"WHITE-TAPES"

FROM 98¢

FREE WITH EVERY TAPE
— this sparkling crystal Tenite utility case

This is the BUY for your money — the original, reasonably priced "White-Tape" by EVANS. Your measuring tape dollar goes further! Chrome plated, sturdy case. Snow-white Bonderized steel blades with jet markings, easy to read, last longer. Velvet push-pull action. Instant change replacement blades available. 12-foot size, made *only* by EVANS, has convenient new blade markings in feet and inches as well as regulation inches.

EVANS
L-O-N-G "WHITE-TAPES"

25-50-75-100 Ft. Lengths. Sensibly priced from $3.49. In transparent utility box. Leather grained vinyl cover. Hook ring attachment no extra charge.

Sold Only Through Retailers

Evans & CO. 410 Trumbull St., Elizabeth, N. J.

EVANS, THE LARGEST PRODUCERS OF STEEL TAPES WORLD-OVER

Makes your lawn SPARKLE

Lawns fed with *Scotts TURF BUILDER* ® get a well-balanced meal, providing quick growing energy, plus lasting beauty growth which the whole family will enjoy all summer. *TURF BUILDER* is clean, granular, easy to apply, has no offensive odor, *costs less than a dime per 100 sq ft.* Comes in handy units up to 50 lb bags.

And for reseeding, it's thrifty to buy *Scotts* ® *LAWN SEED,* the all-perennial blend that produces deluxe lawns. Get it in the orange and green grass design packages. Better get a handy timesaving *Scotts* spreader, too!

Get Scotts Lawn Care Aides at your neighborhood dealer.

For your lawn's sake, read *LAWN CARE* ®. It's the guide to greater year 'round lawn beauty. For a free 2-year subscription, just drop a post card to **O M Scott & SONS CO,** 31 Spring St, Marysville Ohio.

Win up to $1,000 worth of DELTA Tools

in Delta Users' "Finest Home Workshop" Contest!

Write *today* for entry blank to: Contest, Delta Power Tool Div., Rockwell Manufacturing Co., 504D N. Lexington Ave., Pittsburgh 8, Pa. Contest closes July 15, 1955.

Whenever you're painting, you need

SAVOGRAN PRODUCTS ... at better paint & hardware stores

Write for free "Do-It-Yourself" Booklet

SAVOGRAN CO., Dept. 66, 25 Huntington Ave., Boston, Mass.

NEED A WELL?

DRILL IT YOURSELF ... AND SAVE!

CON-SOL Well Driller saves much . . . costs little. Get investment back by rental, contracting or resale. Drills wells deep or shallow, outdoors, in cellars. Lightweight, easy to erect, operate, move. Specially tempered insert drill bit chews through hard rock. Used by U.S. Departments of Agriculture and Forestry; U.S. Navy.

For 4" casings, $385 F.O.B. factory. Includes drill, bailer and 100' cable. Additional cable, up to 300', ¾ hp electric motor or 1½ hp gasoline engine available at extra cost.

HEAVY DUTY MODEL, for 6" casings, available with gasoline engine, at $1295 F.O.B. factory.

90-day guarantee against defective materials and workmanship. Prices and specifications subject to change without notice.

CON-SOL *Write for free literature to DEPT. PS-4*

CONSOLIDATED INDUSTRIES, INC.

WEST CHESHIRE, CONNECTICUT, U.S.A.

No Sanding! No Finishing!

Bruce PREFINISHED Oak Floors

BLOCK, STRIP OR RANCH PLANK – Now it's easy and economical to give your home the new beauty of modern oak floors . . . with all the glamour of nationally-famous Bruce Prefinished Hardwood! In only a few hours, your living room, bedroom, dining room—or that unfinished room upstairs—will glow with a style as modern as tomorrow. You can choose Block, Strip or Ranch Plank design.

It's EASY! These floors are completely finished—even waxed—at the factory. Just cover old floor or smooth subflooring with felt paper and nail down this highest quality oak (or install in mastic over concrete). No sanding or finishing . . . no mess or smell. Ready for use as soon as it's laid . . . and your home will have the rich style and beauty chosen by leading decorators.

It's ECONOMICAL! A new Bruce Hardwood Floor will cost you less than a good rug or carpet . . . and will last the life of your home. The famed Bruce "Scratch Test" proves this durable finish doesn't scratch, chip or mar. Ask your lumber dealer for an estimate. Mail coupon below for colorful literature.

MAIL FOR FREE LITERATURE
E. L. Bruce Co., Box 397-C, Memphis 1, Tenn.
Send me complete, free information on prefinished Bruce Hardwood Floors.
Name.....
Address.....
City..... State.....
BRUCE
Bruce Hardwood Floors
Product world's largest hardwood flooring maker

What Horsepower Really Means
[Continued from page 127]

so-and-sos working for the competition," conceded that loophole techniques amounted in general to only a few percent in the rating.

What makes advertised figures unrealistic is the fact that the rated horsepower never reaches your wheels. An engine rated at 200 hp. may have an "as-installed" output of 185 hp., provided the car doesn't have many power-hungry accessories. But by the time the energy passes through such power-users as transmission, power train, rear axle and tires, actual maximum output may drop down to 100 hp. at the wheels. All this *provided* the engine is new but nicely broken in, and tuned to a gnat's hair. The ordinary wear and maladjustments that most of us put up with might cut the 100 hp. down still lower.

Doesn't torque mean more to performance than horsepower?

TORQUE is a measurement of rotary force, of the twisting energy applied to a shaft. It's given in "pounds-feet"—the amount of twist that would be applied to a shaft by a specified weight hanging from a lever arm of specified length. Unlike horsepower it is not a *rate*—there is no time factor to it—but simply a force.

Plot on a graph the way an engine's torque varies with its speed, and you will see that it changes much less than power does. Although it slopes off at both ends of the speed range, it is much more nearly a plateau, while horsepower is a mountain peak. Thus it is sometimes said that, at the moderate speed ranges where engines spend much of their time, torque is a much bigger element than the infrequently climbed power peak.

Where this generalization becomes shaky, however, is in its failure to recognize that automatic transmissions are now permitting engines to wind up high when you belt the gas. If you are driving a torque-converter car in a brisk boulevard steeplechase, not going over

[Continued on page 262]

New, faster way to strip off finishes

Non-inflammable KLEAN-STRIP peels off paint, varnish, lacquer, enamel, synthetics.

IT'S CLEAN—NO AFTERWASH!

Sold at leading paint, hardware and department stores.

Product of

The KLEAN-STRIP Co., Inc.

2340 S. Lauderdale • Memphis 6, Tenn.

LOOK!...NEW Electric

Lightning Change

ROTOTILLER®

A Real Do-Gooder for Outdoor-Indoor House and Garden Do-It-Yourself Jobs. Inexpensive, Quick, Snap-on Attachments. Light Weight 15 lbs. Powerful Motor 3/4 h.p.

LOW COST Power Tool of 101 Uses

There never was a machine like this *Electric* ROTOTILLER . . . not a toy, but a whole kit of outdoor-indoor power tools. Saves time, heart, back. It digs, hoes, weeds, cultivates, mows, trims, edges, cuts light brush, saws 20" logs, even shovels snow. Indoors, it sands, polishes floors, converts to bench grinder, power drill. Get complete ROTOTILLER story . . use coupon for 68 page FREE illustrated book. No obligation — except ours to back up these claims.

Mail Coupon for FREE BOOK

ROTOTILLER, Inc.
Dept. PS-2, Troy, N. Y.

Please send me FREE 68 page ROTOTILLER book and name of nearest dealer.

Name _____

Address _____

City _____ County _____ State _____

If your car's dip stick repeatedly shows you need to add oil, your power is fading . . . and it's

time to replace your Piston Rings!

Having to buy too much oil and gas, and slow pickup reveal POWER FADE! Your rings are badly worn—you're wasting money on lost power.

Top performance is gone. And despite the extra oil used, vital engine parts remain starved for oil. This is not only costly and wasteful, but is a warning of expensive repairs to come later.

See your motor specialist for a ring check-up. If he recommends a ring change, it will pay you to install Hastings *replacement* rings. They're engineered exclusively for worn engines to quickly stop power fade, oil-pumping and gasoline waste.

All the safety and driving enjoyment of full-powered performance are yours again with Hastings Rings . . . it's the best money you can spend on your car.

HASTINGS MANUFACTURING CO., HASTINGS, MICHIGAN
HASTINGS LTD., TORONTO

Piston Rings, Casite, Oil Filters, Spark Plugs

* TOUGH but oh so gentle

HASTINGS

STEEL-VENT PISTON RINGS

Regular or Chrome-Faced

* TOUGH on oil-pumping • GENTLE on cylinder Walls

SCREENS
you put up from inside in seconds

Columbia-matic
TENSION SCREENS

Columbia-matics fit outside the window, just like ordinary screens, yet they go up from inside. They are the revolutionary new screening idea that saves you time and money and lets you say good-by to old-fashioned screen troubles.

Columbia-matics are flexible, full length; need no side frames, just a top rail and spring-loaded bottom rail that holds screen tightly at all times.

Easily installed the first time—anyone can do it. They come in exact sizes, no fitting. All you need is a screwdriver. Rustproof aluminum* needs no painting, ever. Available with regular or Kaiser Aluminum Shade Screening.

Two patented tension locks anchor bottom rail securely to sill. Press down, they're locked. Flip up, screen swings free. No hardware on sill to snag clothing.

*Available with galvanized screening in certain western states.

Columbia-matics cost no more than ordinary screens. Millions now in use. Get the facts at your screen dealer's. Or mail coupon.

The Columbia Mills, Inc.
Dept. PS-4, Syracuse 1, New York

Send facts on Columbia-matics

Name_____

Address_____

City_____ Zone_____ State_____

In Canada write: Cresswell Pomeroy, Ltd., Montreal 28

What Horsepower Really Means

[Continued from page 260]

45 m.p.h. but still pushing it pretty hard, your engine often works high up on the power-curve slope. But if you have an overdrive car, and take it easy, the engine will spend much more time down in that part of the range where torque is the major component.

Do high horsepowers cost me gas?

THEY can, though they don't have to. The new engines are more efficient, and show up better on such measurements as fuel consumption per horsepower-hour. If you were to drive your 1955 car exactly as you drove your 1941 car, it would give you more miles per gallon. The difficulty is that you don't.

Do high horsepowers mean higher top speeds?

ONLY insignificantly. A passenger car's top speed, up where road load balances maximum power output, is boosted only slightly by big increases in power. Twenty or 25 more horsepower may mean only three to six more m.p.h. top speed.

Do high horsepowers affect safety?

NOT very much. Some critics of high-output cars complain that they go dangerously fast, but pre-1950 cars could do that too. Defenders of the trend cite high accelerations as a safety advantage, claiming that "you can get out of a tight spot faster." While this appears to be true, it is mainly important in that you can pass faster, so that wrong-side-of-the-road exposure is less.

There is one minor drawback to a high-output engine and its lazy rear-axle ratio: the car is deceptively quiet at fast cruising speeds. Where the 1946 car became shrill when you pushed it, the 1955 job minds its manners at whistling speeds. END

Tip to Motorists

How to get rid of that noise in the rear of your car: Let *her* drive.

Only $59.50!

New 3" belt sander

MAKES TOUGH JOBS EASY!

You'll breeze through hundreds of sanding tasks with Porter-Cable's new Model 136 Homemaster Belt Sander!

Build and finish your own furniture and cabinetwork, or refinish antiques . . . remove paint and varnish, fit windows and doors . . . finish new or old wood, metals, plastics, ceramics . . . *get professional results every time!*

Full 3" belt width and powerful universal motor make short work of anything from rough sanding to velvet-smooth final finishing.

Model 136 is *Porter-Cable built* for exceptional value and years of faithful service. See and try it soon.

MODEL 136 . . . ONLY $59.50 COMPLETE

With locking trigger switch, quick-change belt tensioner, instant belt tracking control. Ballbearing construction, precision spur gear drive. Stand available for accurate bench sanding.

VISIT YOUR PORTER-CABLE DEALER OR MAIL COUPON TODAY

PORTER-CABLE MACHINE CO.
5154 N. Salina St., Syracuse 8, N. Y.

Please send complete information on the Model 136 Homemaster Belt Sander.

Name.....

Address.....

City.....Zone.....State.....

Porter-Cable
Homemaster Tools

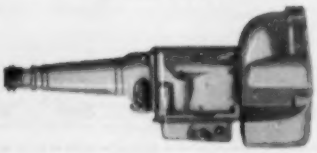
Here's the 1-2-3 of the New Fordomatic Drive!

New Speed-Trigger "low" gear gives Fordomatic 3 automatic forward speeds for the most versatile performance in the low-price field!

The big "automatic" news for '55 is the wider fully-automatic operating range of new Speed-Trigger Fordomatic Drive.

Fordomatic now has a new automatic "low" gear for fast starts and low-speed passing. And Fordomatic is the only automatic in the low-price field to bring you the all-speed versatility of an automatic intermediate gear. But, automatic gears are only half the Fordomatic story. A highly efficient fluid torque converter provides an infinite number of drive ratios . . . *automatically* selects the right one to do the job. And because power is *always* transmitted through a cushion of oil, wear is reduced to a minimum, operation is always smooth and silent.

AVAILABLE WITH THREE MIGHTY ENGINES



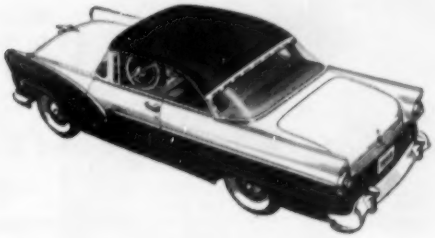
The brilliant new 162-h.p. Y-block V-8

The even more powerful new 182-h.p. Y-block Special V-8

The modern new 120-h.p. I-block Six

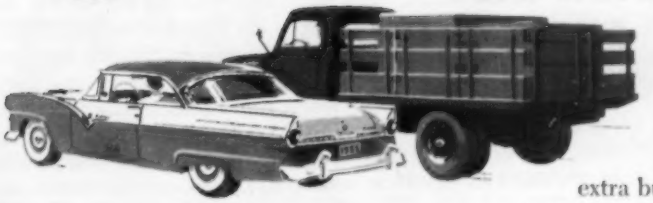
1

Want a real Speed-Trigger start? Just press the accelerator to the toe board and you flash away in low gear, with Fordomatic shifting to intermediate and high *automatically* . . . all while the drive selector is at Drive (DR). For most of your driving, of course, starts will be through intermediate gear as in previous Fordomatics. Then if you want *extra* pickup at low speeds (under 18 m.p.h.) you can go quickly into "low" by pressing the accelerator to the floor.

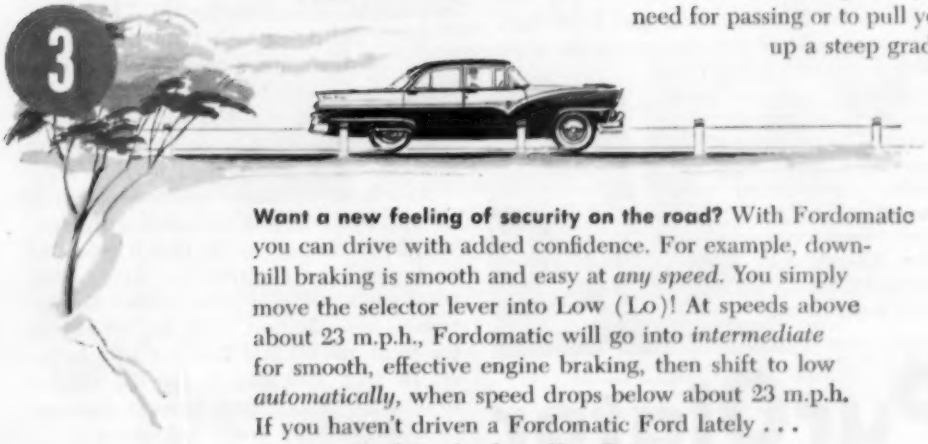


2

Want extra passing and hill-climbing "go"? Merely step down on the accelerator (at speeds up to 60 m.p.h.) and Fordomatic "kicks down" into intermediate gear. You get the extra burst of power you need for passing or to pull you up a steep grade.



3



Want a new feeling of security on the road? With Fordomatic you can drive with added confidence. For example, downhill braking is smooth and easy at *any speed*. You simply move the selector lever into Low (LO)! At speeds above about 23 m.p.h., Fordomatic will go into *intermediate* for smooth, effective engine braking, then shift to low *automatically*, when speed drops below about 23 m.p.h. If you haven't driven a Fordomatic Ford lately . . . see your Ford Dealer for a Test Drive.

FORD Division of FORD MOTOR COMPANY

NOW-change oil & Oil Filter...

IT'S NATION-WIDE OIL FILTER CHECK TIME!

Tell your service man to put in a new Purolator when he changes your oil

A Purolator Micronic filter and fresh summer-weight oil will put your car in shape for miles of trouble-free driving.

Insist on Purolator protection all year long to help prevent destructive engine wear. Tell your service man to install a new Purolator Micronic every 5,000 miles. There's one engineered for every make of car.

PurOlator

America's No.1 OIL FILTER

"Purolator," "Micronic," Reg. U.S. Pat. Off. Purolator Products, Inc., Rahway, N.J.; Toronto, Canada

A Split-Level Designed to Cut Costs

[Continued from page 106]

to be sure. These paper forms are buried in the concrete-slab floor, and carry the warm air from an oil-burning, downdraft furnace to registers in the floor.

The need for a lot of painting is eliminated by having attractive redwood in places where wood is used instead of brick. For the same reason, asbestos cement board is used in the utility area in the rear of the kitchen.

Simple, inexpensive steel straps tie the roof down to the frame of the house to keep it from blowing its top when the big winds come. This is especially important in a house with a low, flat-pitched roof like this one—as was dramatically demonstrated by last year's hurricane Hazel and her sisters.

Nothing makes a motorist obey a traffic light like a cop standing beside it.
—THE SIDEWALK SUPERINTENDENT

Small-item saving: Floor-length windows in the bedrooms, opening outward from the bottom, have friction hinges instead of crank-type, which are more expensive. The floor-length window in the bigger bedroom, incidentally, can become the door into the third bedroom.

Since the house was built by Department of Agriculture labor, a local contractor was asked to estimate what he would build it for. His price of $9,800 works out to $1.07 a cubic foot—lower than development homes in that area.

As a farmer's house, Mr. Dodge pointed out, this one was designed with basic simplicity throughout so that it wouldn't be beyond the construction skills of the rural carpenter and other labor. All materials are standard, can be bought in the local market and handled by a farmer. In fact, the idea is for the farmer to do a lot of the work himself, perhaps with the help of some neighbors.

Your architect for all this is the U. S. Department of Agriculture—for a fee of about $2.50. END

THE GREATEST INVENTION SINCE THE HAND SAW . . .

New AMF DeWalt "Power Shop" brings out the expert in you!

Today, AMF De Walt® "Power Shop" is everywhere known and accepted as the one really safe, accurate, easy-to-use machine. It's so designed that even the inexperienced can *expertly* do everything in home woodworking.

Whether you're modernizing, decorating or repairing your home, AMF De Walt is your best investment. See it demonstrated today. At your De Walt Dealer's or fine hardware and department stores.

$239 delivered (saw blade and custom-built ½ H. P. motor included). EASY TERMS.

All these exclusive extra-value advantages!

TOP-SIDE CUTTING! No guesswork—no mistakes. You always see the cut because layout marks are visible and easy to follow.

PROFESSIONAL ACCURACY! Calibrated scales for miter, bevel and rip are visible above table. Instantaneous settings!

EASY TO USE! You control ball-bearing travel head in radial arm. Moves smoothly, precisely. All cuts perfect—no spoilage.

COMPLETE VERSATILITY! One powerful direct-drive motor accommodates any circular tool—gives full home workshop flexibility.

NO FLOOR SPACE NEEDED! Builds into your workbench! When not in use radial arm swings conveniently out of way, freeing work area.

HOME SAFETY FEATURES! "Stop" red controls, UL*-approved motor, safety key switch, auto-float safety guard (optional).

*Underwriters' Laboratories, Inc.

PLUS BIG CAPACITY and many more extra-value features—all explained in new **FREE 20-PAGE COLOR BOOKLET!**

Another AMF Product

DE WALT POWER TOOLS

De Walt Inc. • Lancaster, Penna., U.S.A.
IN CANADA: De Walt Canada Ltd., Guelph, Ontario

Send this coupon today!

AMF De Walt, Dept. PS-55-4, Lancaster, Penna.

☐ Please send me free illustrated booklet "The Greatest Invention Since The Hand Saw" showing how your Power Shop makes me a woodworking expert, saves money in my home.

Name .....
Address .....
City ..... Zone ..... State .....

Performance going up in smoke?

Diagrams show sections of crankshaft (shaded areas) and increasing oil throw-off through wear.

HERE'S WHY:

1. Normal oil clearance (red). In this case, .0015". Normal oil throw-off (black area).

2. Wear increases oil clearance to .003". Throw-off increased *5 times* (black area).

3. Wear increases oil clearance to .006". Throw-off now *25 times normal* (black ring).

When excess oil reaches combustion chambers, it burns to engine-fouling carbon.

To restore performance, replace with Federal-Mogul engine bearings, *engineered* for the job of oil-control!

FEDERAL-MOGUL SERVICE

Division Federal-Mogul Corporation

DETROIT 13, MICHIGAN

What Really Happened at Texas City

[*Continued from page 154*]

The next logical step was to burn ammonium nitrate and watch exactly what was happening. They heated ammonium nitrate in laboratory flasks and saw the temperature come up very fast at first. Then it leveled off, and it did not rise beyond 292°. Copious white fumes appeared, visible evidence of a chemical reaction in which ammonium nitrate decomposes into gaseous ammonia and nitric acid. But the important thing was that the temperature would rise no further: 292° was the limit.

But it should have risen further. The chemical reaction is self-accelerating. Ultimately in a reaction of this type shock waves are sent out which travel faster than the speed of sound. When these waves start the material burning fast enough to continue the shock, the material detonates. Yet this did not happen at all in the flasks. So the question, as Hainer and Feick restated it, was not: "Why does ammonium nitrate explode?" but rather: "Why does it sometimes *not* explode?"

They now set out to find the heat-limiting mechanism that under normal circumstances kept the temperature at the safe 292° level and prevented the reaction from speeding up any further. Obviously that heat-limiting mechanism was present in boxcar fires and warehouse fires but not in an ammonium nitrate fire inside a ship.

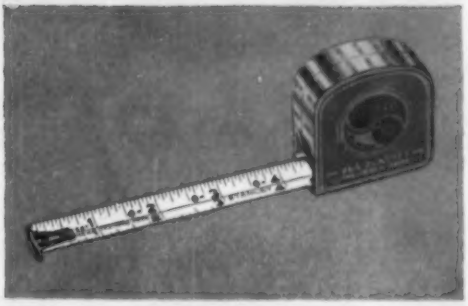
Finding the mechanism was not too difficult. It was the copious white fumes that were carrying off heat. As long as the fumes could do that, the temperature would not rise and there would be no shock waves. But if the fumes were held back, the pressure would rise, and so would the heat.

The process is roughly like that in a pot of boiling water. Even a blowtorch held under an open pot will not raise the temperature of the water above the boiling point. In water, the

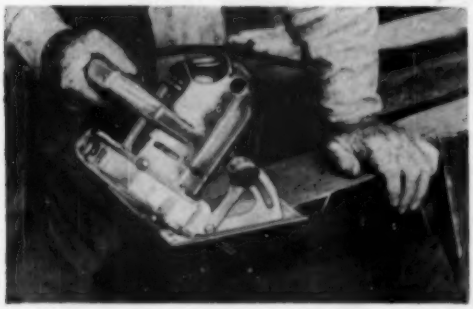
[*Continued on page 270*]

STANLEY PUTS SKILL IN YOUR HANDS

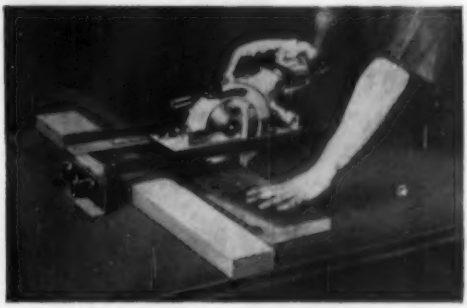
The Nailmaster. An extra foot added to your overhead reach. Holds nail while you start it. Super heat treated steel head and selected white hickory handle. **16 oz. No. N51 ½ — $3.35.**



Long and Wide "Pull-Push" Rule. Stays rigid for hard-to-reach measurements. True zero hook, true reading mouth and double scale marking for accuracy. **10 ft. No. 3610W — $2.39.**



The 7" Builders Saw. This heavy duty, portable electric saw cuts 2 x 4's at 45°. It's a work-hungry tool, loaded with power and designed to make tough jobs easy. Exclusive Stanley "Motor Saver" protects motor from impact loads, as when striking a nail, etc. Multi-grip handle . . . convenient switch . . . automatic telescoping safety guard. **No. H70 — $77.50.**



Saw Track for electric saw. This effective device is handy for many saw cuts where accuracy of angle is vital. It's virtually indispensable for production jobs like cutting rafters, fence pickets, etc. Recommended for cutting slate, marble, other stone with abrasive wheel on saw. **No. H158 — $25.75.**

STANLEY®

Tools · Electric Tools

Divisions of The Stanley Works

TOOLS • ELECTRIC TOOLS • HARDWARE • STEEL • STEEL STRAPPING

Department TE, The Stanley Works,
634 Elm St., New Britain, Conn.

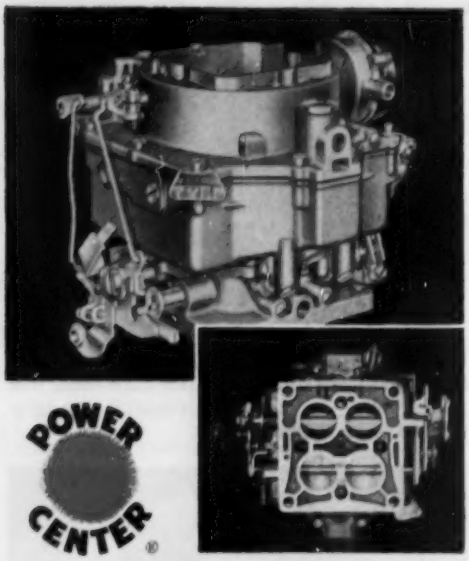
Gentlemen: Please send me
- ☐ free Tool Catalog 54
- ☐ free Electric Tool Catalog EH15
- ☐ 25¢ Pocketbook — "How to Work With Tools and Wood" — I enclose 25¢.

Name _____

Address _____

City _____ Zone ____ State _____

Why a 4-barrel?



POWER CENTER®

CARTER

CARBURETER

Remember when dual carburetion was the talk of automotive circles? It made possible new efficiency and economy in feeding fuel to the engine of your car. Today's mighty CARTER 4-Barrel Carbureter gives you still more: *two more barrels* that go into action *only when you need them* to meet the added demands of rapid acceleration and high speed. A unit of power and economy!

Carter, pioneer of the 4-Barrel Carbureter, proudly keeps pace with the latest developments of automotive engineering.

CARTER CARBURETOR CORPORATION
St. Louis 7, Missouri
Division of ACF INDUSTRIES, INCORPORATED

What Really Happened at Texas City

[Continued from page 268]

temperature-limiting factor, or mechanism, is the evolution of steam. But clamp a tight lid over the pot to keep steam from escaping, and immediately the temperature and the pressure will rise. And you know what happens if this goes on long enough.

But why was there a lid on, so to speak, inside a ship, and why did the ammonium nitrate behave like boiling water *without* a lid when it was stored in boxcars or warehouses? Was there something in a ship that defeated the temperature-limiting factor—that clogged the safety valve built into the chemical make-up of ammonium nitrate?

The answer, Hainer and Feick reasoned, was this:

In a car or a building only relatively small quantities can be stored, and so much of their surface is exposed that the fumes can readily escape.

But inside a ship, with thousands of tons of ammonium nitrate packed tightly together in tens of thousands of paper bags, very little surface is exposed. Near the center of the mass, heat produced through spontaneous generation cannot readily escape to the surface. Thus the cargo becomes heated at an ever-accelerating rate which eventually leads to spontaneous combustion—flame. The burning ammonium nitrate gives off fumes that can't escape fast enough, and pressure builds up. More pressure means still higher temperatures. This in turn means still faster rates of reaction.

Finally comes the moment at which the reaction waves, traveling with the speed of sound, set off a detonation—and the ship blows up.

This chain reaction also explained why small-scale experiments must fail. No matter how closely the model simulates conditions in a ship, the mass-surface ratio is quite different. The built-in safety valve never gets clogged. The ammonium nitrate, ridding itself of its

[Continued on page 272]

FREE...THIS $15 CALIBRATED MECHANICAL STAGE

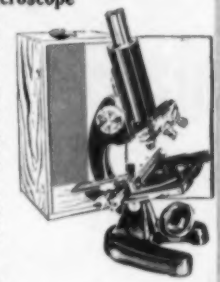
Model 635 150-300-600 Power Professional Microscope

(Our standard $14.95 mechanical stage included at no extra cost only when your order is accompanied by this advertisement. Limit: one per customer unless your order is sent on school, institution or university letterhead or purchase order.)

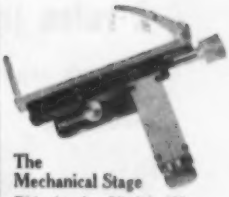
The model 635 microscope is the most widely used instrument in its class in the United States today. Extremely sturdy and well made, it is perfect for the heavy load of classroom and laboratory work. Its optics are excellent, focusing is smooth and positive rack-and-pinion. Equipped with condenser and 6-aperture rotating diaphragm.

Purchase price includes 15X eyepiece and triple revolving turret with 10X, 20X and 30X objectives allowing 150X, 300X and 600X magnifications. Additional eyepieces of various powers may be ordered from our catalog which accompanies your order.

This instrument is the favorite workhorse of microscopy. It is designed for biologists, botanists, hobbyists and students. It allows the study of cellular structure, microscopic plant and animal life. The model 635 has been stripped of all frills to sell at this price. Its basic performance is equal to many models costing over $100. It is shipped insured and well packed in a fitted hardwood cabinet as shown with slides and manual.



$29.95 *postpaid*



The Mechanical Stage

This is the Model 400 Mechanical Stage as illustrated and priced at $14.95 in our catalog. Our inventory shows that we have an overstock of about 500 of this model. Rather than liquidate these very fine accessories in case lots we have decided to use them to obtain a great many new friends for Precision Optical instruments. If you are a prospective hobbyist you might not be familiar with the function of the mechanical stage. It allows you to scan an entire slide up and down, right and left, slowly or rapidly by simply turning one of the two calibrated knurled knobs.

Mark III Improved 20 Power Coated Lens Telescope

908 Sq. MM Coated front lens—a giant powerful eye for hunters, sportsmen, boat owners. All metal, rust and salt spray resistant. Calibrated spiral eyepiece plus regular telescope extension for brilliant pin-point focus. Shipped in genuine pigskin case. An excellent gift, a lifetime possession. **$9.95** *postpaid*

300 Power—100-200-300 Power—Our most popular microscope model for schools and hobbyists. Brilliant optics, three precision ground optical glass objective lenses plus optically ground glass ocular X lens (eyepiece). Powerful enough to see and study microscopic animals in a drop of water. It is shipped to you postpaid and insured with slides, fitted hardwood cabinet and manual. **$7.95** *postpaid*

Heidelberg

20 to 2000 Power

A superior research instrument for the professional microscopist. Purchase price includes both binocular and monocular heads, special Heidelberg mechanical stage. Ideal for micro-projection and photomicrography. Send for special Heidelberg brochure. **$319**

postpaid in U.S.
Inquire for export terms.

25 to 1200 Power VON STEUBEN

Our complete professional research instrument. Quadruple turret, revolving circular stage, full rotating consultation head, variable focus condenser, variable shutter iris, standard color corrected achromatic optics throughout. Latest "L" design body. Oil immersion available. Additional eyepieces available. See our catalog. Objectives identified by our exclusive color-keyed selector rods. Coaxial coarse and calibrated fine adjustments. Shipped insured in finely finished fitted hardwood cabinet. A lifetime gift or purchase for the professional man or woman. *Separate Von Steuben* **$89.50** *postpaid*

brochure mailed free on request.

ACCESSORY LIST

OBJECTIVE LENSES	EYEPIECES
5X..... *	5X...$ 4.00
10X..... *	8X...$ 4.50
20X..... *	10X...$ 5.40
40X..... *	12X...$ 6.50
60X (oil)	15X... *
....$20.00	20X...$13.00

MAGNIFICATION CHART EYEPIECES

OBJECTIVE LENSES	5	8	10	12	15	20
5	25	40	50	60	75	100
10	50	80	100	120	150	200
20	100	160	200	240	300	400
40	200	320	400	480	600	800
60*	300*	480*	600*	720*	900*	1200*

*OIL IMMERSION

Mechanical stage also free with Von Steuben microscopes ordered from this advertisement.

***These items included in purchase price of instrument.**

Exploring in the Micro-age—

A popular book on the collection of micro-subjects, how to start a live micro-zoo, where to look, how to get the most out of your miscroscope. **$1.00** *postpaid*

Free—New 1955 Catalog

Mailed with all orders or free on request. Microscopes from $7.95 up to all ranges. Other remarkable bargains in optics of all kinds. Instruments made to our rigid specifications and designs by specially selected Japanese optical firms.

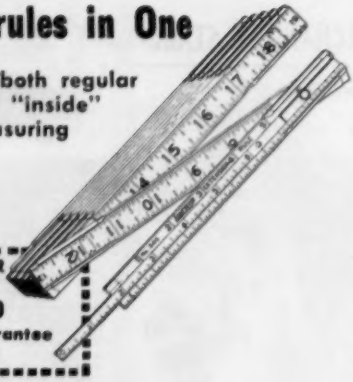
PRECISION OPTICAL CO.

9 PRECISION BLDG.
4379 SUNSET BLVD. · LOS ANGELES 29, CALIFORNIA

TO ORDER: Send check, cash or money order. ½ deposit for C.O.D. 10-day uncond. guarantee. Calif. resid. add 3% state tax.

2 rules in One

for both regular and "inside" measuring



LOOK FOR THE RED END your guarantee of quality

LUFKIN X-46

EXTENSION WOOD RULE

Hundreds of thousands of Craftsmen the world over prefer the Lufkin X-46 because . . . it's extra durable with sections 50% thicker than standard . . . it has rust-proof triple-locking joints that maintain accuracy . . . it has brass strike plates to prevent wear . . . it has bold markings embedded right into the wood . . . it's made of select straight-grained hard maple. Buy a Lufkin X-46 and be equipped for accuracy and speed on both regular measurements and inside measuring of doors, windows, etc. You'll find it the finest, most durable wood rule you ever used.

BUY LUFKIN TAPES • RULES • PRECISION TOOLS AT YOUR HARDWARE OR TOOL STORE

354 THE LUFKIN RULE CO., SAGINAW, MICHIGAN

PUMP WATER FAST!

Drains Wash Tubs, Cellars, Cisterns. Famous #7 pumps 4000 gph. 700 gph. at 95' high; or 2400 gph. from 25' well. Sturdy rustproof alloy metal. Six blade impeller. ¾" inlet, ½" outlet. Standard pipe threaded. Uses any ⅙ to ½ H.P. Motor. Will not leak or clog. Ironclad guarantee. Send check, M.O., or sent C.O.D. $8.95 m.o.s.

Irrigate, Fill Tanks, Draw Well Water. Heavy duty #8 pumps 9500 gph. 1200 gph. 95' high 5000 gph. from 25' well. Rustproof alloy metal. 8 blade impeller. 1" inlet, 1" outlet. Standard pipe threaded. Will not leak or clog. Iron clad guarantee. Send check, M.O., or sent C.O.D. $11.95 m.o.s.

Free Catalogue—Gear Pumps, Large Centrifugal Pumps, Deep and Shallow Well Pumps, Sump Pumps.

MOORE MANUFACTURING CO.
SWEDESBORO 7, NEW JERSEY

Weekend Carpenters

Add a professional finish to your jobs with Plastic Wood—the wood filler most carpenters use. Easy to apply... handles like putty, hardens into real wood.

YOU NEED "PLASTIC WOOD"®

What Really Happened at Texas City

[Continued from page 270]

surplus heat by giving off fumes, can never explode.

Still, there was a need for a practical test of the soundness of their theory. Obviously, Hainer and Feick could not take a freighter, load it with ammonium nitrate and wait for it to explode. The simple apparatus they rigged up consisted, basically, of a metal pipe filled with ammonium nitrate set afire and then closed. This practically duplicated temperature and pressure conditions inside the ship's hold; the pipe and its contents could be regarded as a core section of the cargo.

Two similar experiments took place. In the first, the entire contents of the pipe were blown out to a distance of over 150 feet. In the second, an explosion ripped off the pipe's cover, shooting a stream of fire in one direction and driving the pipe itself backward into the ground so hard that Dr. Hainer was unable to pull it out with his Chevrolet. He had to get a truck to do it.

Here was the answer the Coast Guard had been looking for—an answer to the question: "Why did the *Grandcamp's* cargo of ammonium nitrate explode from fire?"

Hainer and Feick, scientific detectives, have turned over to the Government a stack of reports full of chemical and mathematical formulas and diagrams plotting the reactions of various types of ammonium nitrate under various conditions of heat and pressure. These are serving as the basis for proposed new regulations for shipping ammonium nitrates. Once these regulations are in force, there should never be another disaster like that in Texas City. END

Modern Design

"There's a nice spot for a nest in that old barn," said one robin to another.

"No, thanks," came the reply. "We're thinking of a branch-type."—*Wall Street Journal.*

Here's what HERTZ RENT A CAR SYSTEM found out about Car-Plate –

Easiest way to put on the toughest kind of wax

HERTZ picked 20 of its rental cars in cities across the U. S. One side of each was waxed with liquid Car-Plate, the other with one of three well-known paste waxes.

HERTZ FOUND: *Car-Plate is far faster, easier to apply than any paste auto wax.*

After months on the road, the sides were compared for wear and shine.

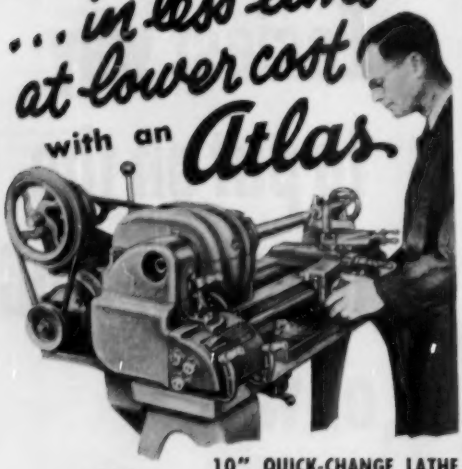
HERTZ FOUND: *Car-Plate lasts as long as the most durable paste auto wax.*

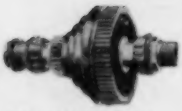
The reason: All the Car-Plate wax *stays on* your car—you don't rub wax *off* as when polishing paste wax. The Hertz test car shown here was driven 3 months, then simply washed and photographed. If you can't tell the Car-Plate side (left) from the paste side, why waste hours rubbing? Next time wax with Car-Plate!

Before waxing use Car-Plate Cleaner. Wax will bond perfectly in a brilliant, long-lasting finish.

JOHNSON'S CAR-PLATE WAX

Do more jobs better ... in less time ... at lower cost with an Atlas





TIMKEN TAPERED ROLLER BEARINGS

QUICK-CHANGE GEARS

HEAVY-DUTY PRECISION GROUND BED

10" QUICK-CHANGE LATHE

For experimental, development and hobby work . . . or small parts production, ATLAS Precision Lathes give you many more important features that increase accuracy, speed production and cut costs than any other lathes in the lower price field!

They're the only low-cost 10" and 6" lathes to give you the precision and dependable service of Timken Tapered Roller Bearings! The ATLAS 10" Quick-Change Lathe (illustrated above) with instant selection of 54 threads or feeds, instantly reversible power cross and longitudinal feeds, 16 spindle speeds, V-Belt drive, massive precision ground bed, 5⅞" swing over carriage and 4 to 240 threading range assure you for greater ease and speed of operation, and a much wider work range than any other lathe at or near its low price!

A feature by feature comparison will be a revelation to you! Before you buy, see your nearest ATLAS Dealer . . . use coupon below for latest catalog.

ATLAS 6" - 10" LATHE PRICES START AT $145.00 F.O.B. Factory

DEPENDABLE QUALITY TOOLS SINCE 1911

SEND FOR FREE CATALOG

ATLAS PRESS CO., 4-25 N. Pitcher St., Kalamazoo, Mich.
Please send latest information on ATLAS Tools.

☐ 10" Lathe; ☐ 6" Lathe; ☐ Drill Press;
☐ Miller; ☐ Shaper; ☐ Grinder-Hone

NAME _____

ADDRESS _____

CITY, STATE _____

REFINISHING Your Boat, Furniture, Cottage?

DO IT WITH A

DREMEL

STRAIGHT-LINE-ACTION SANDER

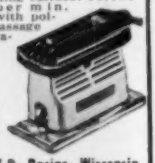
MODEL "53" New heavy-duty sander with powerful ROTARY MOTOR. Weighs only 5¼ lbs., has 24 sq. in. pad. Can be used for rough and finish sanding. Complete with 2 detachable pads, 6 abrasive sheets..... **$34.85**

Write for **FREE** catalog

Finishing experts agree—and tests prove—only straight-line-action sanding is free of orbital swirls and gouges. Be sure of perfect finishes! Insist on DREMEL with-the-grain sanders. Choose from three unbeatable models.

MODEL "2000" Perfect for small shop and home use. High speed motor produces 14,400 strokes per minute; wt. 5 lbs.; 21 sq. in. sanding surface. Price including steel carrying case, polishing pad, 6 abrasives..... **$24.50**

MODEL "A" Wt. 2½ lbs.; 12 sq. in. sanding surface. 14,400 strokes per min. Complete with polish pad, massage pad, 6 abrasives. **$14.85**



SEE YOUR DEALER.
If he cannot supply, order direct on 5-day trial, money-back guarantee. Remit in full for postpaid shipment. Or send $2, pay postman balance plus C.O.D. fee.

DREMEL MFG. CO., Dept. 125-B, Racine, Wisconsin

TON-GRIP

2000 LBS.

IN A 20-Ounce Tool!

VISE-GRIP

World's Handiest "Do-It-Yourself" Tool!

What **power** it gives you — for every job! A squeeze of the hand **locks** jaws onto work with more than **Ton-Grip**. Won't slip. It's a super-pliers, all-purpose wrench, wire cutter, hand vise and clamp—all in one! **Does more jobs easier than any other tool!** 7" and 10", cutter optional. Only $1.85 to $2.60 at your hardware dealer. Get a Vise-Grip — get **handy — today!**

MADE ONLY BY

PETERSEN MFG. CO., Dept. M-4, DeWitt, Nebr.

Have Fun...Save Money

MAKE IT YOURSELF WITH THE NEW

DREMEL MOTO-JIG-SAW

Actually Cuts 2 x 4's! Powered by a real ROTARY Motor!

complete with motor **$23.50**

The new DREMEL opens the door to an exciting wood working hobby the whole family can enjoy. (Foolproof blade guard makes it safe for children.) The DREMEL is rugged enough for production work, cuts intricate scrolls impossible for other jig saws. There's no limit to the things it can make, from window valances to toys, from lawn furniture to knicknack shelves. A trial will convince you that dollar-for-dollar, the DREMEL is the best power tool investment any family can make!

ELECTRIC DREMEL POWER TOOLS

WRITE FOR FREE LITERATURE

SEE YOUR DEALER. If he cannot supply you, order direct on a five-day trial, money-back guarantee. Remit in full and we will ship postpaid. Or send $2 now, pay postman balance plus C.O.D. fee.

DREMEL MFG. CO. Dept. 125-D, Racine, Wisconsin

FREE CATALOG OF WOOD AND WOODWORKING MATERIALS

World's Largest Selection of Finest Domestic and Imported Woods . . . Mouldings, Hardware, Tools, —ALL AT LOW MONEY SAVING PRICES!

Your complete wood buying guide and project book. Craftsman is your best, most complete source of finest kiln-dried domestic and rare imported woods, beautiful wood inlays, colorful bandings, matched plywoods, embossed mouldings, carved ornaments, newest woodworking tools, "hard to find" cabinet hardware and fittings . . . more than 1,500 items! Packed with newest scroll saw patterns, project ideas & money making plans. Enclose 25c (refunded with first order) to help pay mailing, handling cost. Write now!

Craftsman Wood Service Co., Dept. B-54, 2729 S. Mary Street - Chicago 8, Ill.

148 PAGES
Many in full color
packed with rare, fancy & imported woods ... veneers, plywoods, patterns, tools, ornaments, hardware ... everything for the woodworker.

MAIL COUPON NOW!

CRAFTSMAN WOOD SERVICE CO.,
Dept. B-54, 2729 S. Mary St., Chicago 8, Ill.

Enclosed find 25c (Refunded on first order) to pay mailing and handling. Rush me new *Woodworkers' Catalog Handbook*.

NAME_____

ADDRESS_____

CITY_____ZONE____STATE_____

Live Outdoors in Luxury

...on the Screened-In Porch You Build Yourself with

REYNOLDS *DO-IT-YOURSELF** ALUMINUM

It's quick, easy, with just woodworking tools

Make screens for your porch with simple tools like a saw, a hammer, sciissors—and Reynolds *Do-It-Yourself* Aluminum. Reynolds screen frame members of good looking, non-rusting aluminum are easily cut and assembled. Attaching aluminum screening is quick and simple. Ask for Reynolds Plan No. 117—only 25¢.

Do-It-Yourself Aluminum is perfect for regular window screens. Your dealer has FREE instruction sheets. And now Reynolds offers New Do-It-Yourself Storm Sash Interchangeable with Screens!

REYNOLDS *DO-IT-YOURSELF* ALUMINUM

2493 South Third Street, Louisville 1, Kentucky

At Your Hardware or Building Supply Dealer Look for This Rack Containing

screen and storm sash sections • tubes • rod • bar • a wide variety of sheet designs • angles • fasteners • window hardware • Reynolon plastic film • trim strip • Do-It-Yourself Plans and Easi-Bild† Patterns.

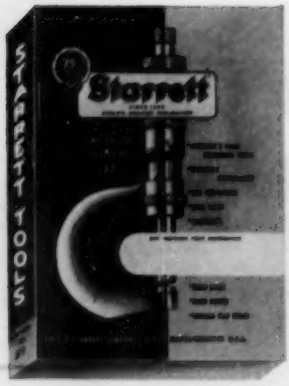
DO-IT-YOURSELF

As Easy to Work as Wood

*T. M. REYNOLDS METALS COMPANY

†T. M. REG. EASI-BILD PATTERN COMPANY

Available in Canada



commemorating 75 years of precision toolmaking

BIG NEW Starrett® CATALOG

75th ANNIVERSARY EDITION

Presenting the world's most complete line of mechanics' hand measuring tools and instruments, dial indicators, steel tapes, hacksaws, band saws, band knives and precision ground flat stock. A completely new catalog to commemorate Starrett's Diamond Jubilee in Precision Toolmaking. Features 85 new tools. If you buy or use tools, you need this big, new catalog. Send the coupon today for your *free* copy.

FREE 75th ANNIVERSARY STARRETT CATALOG

THE L. S. STARRETT CO.
Dept. PS, Athol, Mass., U.S.A.

Please send my copy of the big, new Starrett *75th Anniversary* Catalog

Name.....*Position*.....

Address.....

City.....*Zone*....*State*.....

YOU CAN START A $40 A DAY BUSINESS IN YOUR SPARE TIME

Andy Phillips says: "MyBELSAW Sharp Smith gives me big profits at low expense — I can run 35 to 40 circular saws in an 8-hour day — that makes me $40 cash."

"I also get BIG EXTRA PROFITS... up to $4 an hour.. by grinding planer and jointer knives — there's always a demand for this kind of work."

You can start this REPEAT CASH business in your own home or garage while you are working at your regular job. Easy to operate, no experience needed. "Pays for itself from just 65 jobs." — *Harvey Jensen*

For as little as $15 down payment, you can get your BELSAW SHARP SMITH rushed to you.

FREE book tells how

YOU can start making money the very day your BELSAW SHARP SMITH arrives. Earns $4 to $5 an hour in your SPARE TIME sharpening and setting circular saws for builders, lumber yards, factories...Plus BIG EXTRA CASH, precision grinding planer and jointer knives, plane irons, wood chisels and drill bits. Hundreds of jobs in your own neighborhood. No extra equipment needed, no canvassing. Send today for your Free copy of "Life-Time Security."

LIFE-TIME SECURITY FOR YOUR OWN BUSINESS

BELSAW MACHINERY CO
4408 Field Building Kansas City 11, Mo.

PORTABLE ELECTRIC POWER

when and where you need it!

Make your own electricity for home or shop. Take it with you to camp or cabin. 4-cycle, gasoline engine drives the 1500 watt generator. Two 115 volt receptacles for plugging in lights, power tools, pumps, heaters, and appliances. One man easily carries it . . . has it running in seconds. Write for details on DC (97 lbs.) or AC (107 lbs.) models. Other sizes available.

MASTER VIBRATOR COMPANY
236 Stanley Avenue, Dayton, Ohio

Only **HOLD-E-ZEE**
The Original AUTOMATIC GRIP
SCREWDRIVERS

PROVIDE THESE FEATURES:
- **LOK-BLOK** that makes blade twist and impact proof.
- **GRIPPER** that snaps back—recedes deep into handle, giving full blade use.
- **HAND GROUND BITS**—chrome vanadium, chrome plated blades.

YET COST NO MORE THAN ORDINARY SCREWDRIVERS

At Leading Dealers Everywhere!

UPSON BROS. INC. ROCHESTER 14, N. Y.

Under the Beauty...

Steel for strength...
Leather for comfort!

You'll like the skillful way that Estwing craftsmen combine leather and steel in making the world's only one piece hammers and hatchets.

Perfectly balanced and beautifully finished, Estwing is the choice of skilled tradesmen the world over.

Available at your favorite hardware store. $3.95

FREE Catalog on request

Estwing Mfg. Co., Dept. 4S, Rockford, Illinois

the original
MODEL NO. 1
WHIZ SAW
by *Forsberg*

7 SAWS IN 1
$55.00
COMPLETE WITH 3 BLADES

cuts circles, intricate patterns up to 1" thicknesses with ease and speed

Whiz-Saw is the ideal power saw for all sorts of home repairs, plumbing, electrical work, furniture making, cabinet making, hobby projects because it's seven saws in one . . . Rip—Crosscut—Scroll—Coping—Keyhole—Band and Jig Saw. Cuts up to 1" thicknesses—wood, plywood, plywood laminated with Formica or Micarta, pressed wood, bone and hard rubber. Inside cuts without boring a blade hole. **Whiz-Saw** guides easily with one hand . . . safe to operate . . . ruggedly constructed for long life. **If not available at your dealer's—mail the coupon today.**

The Forsberg Mfg. Co.—Dept. PS
125 Seaview Ave., Bridgeport 1, Conn., U.S.A.

Gentlemen:
☐ Please send me free literature on the Whiz-Saw #1 and accessories.
☐ Please send me information on the more powerful Whiz-Saw #2.

NAME _____
ADDRESS _____
CITY _____ ZONE _____
STATE _____

Warm, Dry Floors

With Amazing **ZONOLITE®**
INSULATING CONCRETE

IDEAL FOR

Basementless Houses

Garages

Farm Buildings

ZONOLITE (BRAND) VERMICULITE AGGREGATES

Blocks Condensation, Prevents Heat Loss!

Building or remodeling a house, garage or farm structure? Here's a way to be sure of *warm, dry* floors all year 'round! One inch of Zonolite concrete insulates as well as 12 to 16 inches of ordinary concrete! **LIGHTWEIGHT...easy to mix. You can do it yourself!** A good investment in any building for comfort, fuel savings; for increased profits from farm stock.

See your building supply dealer for FREE estimate on how much Zonolite Concrete Aggregate you'll need for your job.

Zonolite Company, Dept. PSM45
135 S. LaSalle St., Chicago 3, Ill.

Please rush free "How-to-do-it" manual. No obligation.

Name.....
Address.....
City.....*Zone*....*State*.....

solves woodworking problems in seconds!

Speed your jobs, get answers to countless building and woodworking questions immediately! Improved GREENLEE Woodworking Calculator converts linear to board feet, gives nail specifications, tool sharpening tips. Compares woods, gives bit sizes for screws, concrete mixes, painting information, etc. Convenient . . . simple to read. 6" diameter . . . heavily varnished cardboard. Special offer by the makers of famous GREENLEE tools . . . **Only 25¢**

(no stamps please)

TOOLS FOR CRAFTSMEN

GREENLEE

The GREENLEE line of fine tools includes auger bits, electric drill bits, chisels, gouges, spiral screw drivers, drawknives, and many more. At leading hardware and building supply dealers.

GREENLEE TOOL CO.,
2124 Columbia Ave., Rockford, Ill.

REMOVE PAINT

. . . not coat by coat but all in one easy scraping!

Wonder-Paste turns paint, varnish, enamel, etc., to a soft sludge that's easy to remove. Clings to upright surfaces. Excellent indoors or out. At paint and hardware stores.

- ***Write for leaflet—and advice on your removing problem.***

WONDER-PASTE

- **NEW Complete Guide on Refinishing** furniture, woodwork, floors, kitchen cabinets, exteriors. Fully illustrated. Send 25¢ today for your copy.

Wilsen-Imperial Co., 121 Chestnut St., Newark 5, N. J.

Swif

New 50/50 Solder and Flux in paste form

Easier to apply, works faster and cleaner. Do small jobs with heat of a match. One tube makes hundreds of joints.

At Hardware counters . . . . . **59¢**

a HERCULES product

Also ADULT 2 Passenger "Eshelman" SPORT CAR 1/5 the cost of any other auto 70 Miles per Gal. Free Catalog

RAKES PLOWS CULTIVATES HARROWS HAULS SPRAYS SAWS DOZER MOWS CUTS ROLLS TILLS SNOW PLOW

ESHELMAN FOR Better LAWNS And GARDENS

1 to 8 H.P. Also Walking Tractors Low as . . . **$69**

Women can operate it. Free Catalog. Write ESHELMAN, Dept. R-44, 109 Light St., Balto 2, Md., 333 N. Michigan Ave., Chicago 1, Ill., 6087 Sunset Blvd., Los Angeles 28, California.

A PRECISION LEVELING INSTRUMENT *for only* $12.95

With the New LEVELALL one man can do the work of two men and a transit, quickly, easily, accurately. All alone you can speedily level points for footings, forms, piping, batter boards, sills, lintels, floors, ceilings, roads, driveways, lawns — any type of construction work. Send for Free booklet or, better yet, order a DeLuxe Levelall today.

*Name*_____

*Street*_____

*City*_____ *Zone*____ *State*____

☐ Mail 75' DeLuxe Levelall @ $12.95 ☐ Regular 50' model @ $9.95 ☐ Ship postpaid full price enclosed ☐ Ship C.O.D. Money-back satisfaction guaranteed.

LEVELALL 81-D Webster Street, Rockland, Mass.

New "PULL-GEAR" SPEED-REDUCING PULLEY

Provides Correct Speed and Power to Drill Up to 1 3/8" with 1/2 H.P. Motor

Amazing new internally geared speed reducer doubles drill press capacity. Greater power, greater efficiency, greater productivity.

Provides the correct speed and power for larger drilling, reaming, tapping and boring on light presses. Easily installed in five minutes. Adaptable to all type machines. Spindle speed range approx. 45 to 3000 RPM. Made in 3 motor shaft sizes: 1/2"—5/8"—3/4". Write for literature.

WRITE FOR LITERATURE

THE PULL-GEAR CO.
25429 Mound Road
Center Line, Michigan

Snap-on MAGNETIC PICK-UP TOOLS

Indispensable for retrieving nuts, bolts, any small iron or steel objects that fall into hard-to-get-at spots. Powerful, permanent Alnico magnets are fitted into slender handles. Two popular types. Order direct from factory.

PT-27—Large pick-up with hinged head for round-the-corner accessibility. Length 16 1/2". Sliding handle extends to 27". Lifts 24 oz. Price.....**$1.90**

PT-6—Handy pocket size pick-up with clip. Small but powerful—lifts 16 oz. Price.....**$1.10**

Snap-on Tools
THE CHOICE OF BETTER MECHANICS

Snap-on Tools Corporation
8060-D 28th Ave., Kenosha, Wis.

I enclose check ☐, money order ☐ for $.....
(Add local sales tax if any.) Send me PT-27 ☐, PT-6 ☐, Tool Catalog ☐, postpaid.

Name.....
Address.....
City.....Zone...State.....

*Snap-on is the trademark of Snap-on Tools Corporation

GONE!

Most wallboard joints disappear with just one coat of these . . .

TEXOLITE*
latex paints

TEXOLITE TEXTURE
Sand Finish
17 colors!

TEXOLITE RIPPLE
Smooth Stipple Finish
12 colors!

No priming...No mixing

One coat conceals wallboard joints finished with PERF-A-TAPE* system; all minor surface imperfections, too. Flows on freely and evenly with a brush or roller; dries fast to a luxurious textured-finish without "painty" odor. Ideal for imperfect plastered surfaces, too. See your TEXOLITE paint dealer or write Dept. PS-2, 300 West Adams St., Chicago 6, Ill.

*T. M. REG. U. S. PAT. OFF.

U.S.G. UNITED STATES GYPSUM

UNITED STATES GYPSUM
The Greatest Name in Building

Arc Welding plus AC Power

for lights, tools, appliances, etc.

. . . a real profit maker for emergency repair jobs

TWO machines in ONE

AC Power-AC Welding Combination

Easy Portability! Take it **ANYWHERE.** See how it PAYS!

This rugged AC welder-AC power combination with 4 cylinder air-cooled engine gives you 250 amp. welding current and 5000 watt AC power alternately—it's the welder you need for "cashing in" on "big pay" jobs that call for on-the-spot service. Can be loaded on truck or trailer on a moment's notice.

"Husky Boy"

AC Welder-AC Power Combination—save money—just connect this low cost generator only—to an old auto engine. It's ideal for 200 to 300 amp. welding operations, where power lines are unavailable, or for furnishing emergency power for lights, tools, etc.

"Husky Boy" 200 amp. welder driven by a 2 cylinder air-cooled engine. Perfect for outside or in and around the shop welding. Handles the big pay jobs.

AC Transformer

Transformer Type AC Welder 200 amp. a real welder for production and repair work in shops that have only single phase power available.

Investigate these MONEY MAKERS today!

"Pipeliner" 250 amp. gasoline engine driven welder with plenty of power to maintain a hot, fast, dependable arc. Also equipped with a 1 KW DC auxiliary power receptacle.

"Pipeliner"

Learn arc welding quickly by actual on-the-job experience at the non-profit Hobart Trade School. Complete or partial courses. G. I. approved.

Modern Arc Welding Lessons 200 fully illustrated pages. Learn practical arc welding in your spare time . . . Only $1.00.

HOBART BROTHERS CO., BOX P-45, Troy, Ohio, Phone 21223

MAIL Coupon today

"One of the world's largest builders of arc welding equipment"

HOBART BROTHERS CO., Box P-45, Troy, Ohio

Please send me additional data on items checked.

☐ AC Power—AC Welding ☐ "Husky Boy"
☐ AC Transformer ☐ "Pipeliner" ☐ Hobart Welding School ☐ Welding Lessons, $1.00.

free Welder's Vest Pocket Guide

NAME _____

ADDRESS _____

CITY _____ STATE _____

SUPER SAW FILER No. 6

IT'S NEW! and so simple you can file a saw blindfolded!

Automatically Controls

DEPTH — ANGLE — PITCH

Perfect bevel and angle maintained and fool-proof depth control for all Rip, Crosscut, and Handsaws. Precision made and calibrated for instant setting at desired angle. Can be used in any vise or clamp. Complete with file only . . . . . **$6.50** ppd.

Automatic DEPTH CONTROL Rollers

JOINT AND SHARPEN ALL SAWS

SUPER FILER NO. 9

SO EASY to joint and file saws like new. Two hardened steel rollers keep teeth same height. All teeth cut, saw runs true and smooth. $2.95 ppd.

"TRU-CIRCLE" SAW SET

Automatically sets teeth at 10° or more. $2.95 ppd.

SUPER FILER NO. 11

For both hand and circular saws. Steel rollers give all teeth correct height, pitch and bevel. $9.95 ppd.

SUPER DRILL GRINDER

Sharpens round shank drills like new, using hand or power grinders. $7.95 ppd.

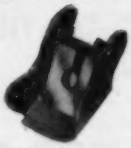
send for **FREE CATALOG**

A. D. McBURNEY, 5908 Hollywood Blvd., Hollywood 28, Calif., Dept.: S-45

Little Shaver FINGER PLANE

DOES 1001 HE-MAN JOBS

Shaves 'em down to size! Planes **everything:** screens, shelves, cabinets, cupboard doors, drawers, windows, sills, doors — even aluminum. Ideal for hobby work. Accurate finger control for fast, effortless work. Adjustable to 1/10,000" for depth of cut and alignment. Hardened tool steel blade for extra sharpness. Complete $1.00. Money-back guarantee. Essay Products Co., Dept. 207, Quincy 69, Mass.



Only $1.00 complete

KROIL LOOSENS RUSTY FROZEN PARTS

creeps in

12,000 industrial plants now use Kroil for emergencies like frozen bolts, pipe threads, bearings, etc. Kroil creeps into millionth inch spaces to dissolve rust and dried grease . . . guaranteed to loosen stuck-together metal parts or money back—gallon $3.85 f.o.b. Factory or send $1.50 for two 8 oz. spout cans postpaid.

KANO LABS., 1031 Thompson Lane, NASHVILLE 11, TENN.

WONDER DRILL SAW BIT

DRILLS and SAWS

DRILLS OWN STARTING HOLE

Combination bit for electric drills. Use as a drill, saw or reamer. Use for circles, ovals, squares, inside, hard-to-reach work. Works equally well in metal, pipe, wood, plastic, etc. Easy to use. Every carpenter, mechanic, electrician, plumber, hobbyist needs one. Made of abrasive resistant, hi-speed steel. Stands severe, continuous use without breaking. Resharpened free. Use with electric drill, slow drill press, lathe or milling machine. ½" diameter, 2" cutting section, total length 3½". 3 types—wood, metal or all purpose. Set of 3, $5.75. Details on request. Dealer inquiries invited. Money Back Guarantee. Shipped same day. Send check or money order to

NOW only $1.95

WONDER DRILL COMPANY

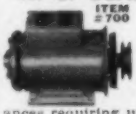
Box 8321, Dept. PS-3 Kansas City 5, Mo.

GREAT SURPLUS SALE OF HOME, FARM AND FACTORY EQUIPMENT

ALL ITEMS BRAND NEW

BELT DRIVEN

A. C. GENERATOR



ITEM #700

Ideal for powering electric tools, oil burner, refrigerator, lights, or other appliances requiring up to 700 watts of power. 700 watts. 115 Volts, 60 cycles A.C. 3600 R.P.M. Compact, self-regulating generator with V Belt pulley and double outlet receptacle. Rotation counter-clockwise. May be driven by tractor or auxiliary gasoline engine. Requires 2 HP minimum. Dimensions: 10" long x 8" high x 6" wide. Shipping wt. 27 lbs.
F.O.B. Chicago..... **59.50**

PESCO GEAR TYPE

HYDRAULIC PUMP

Compact — Powerful — Reliable

ITEM #160—Especially designed for belt drive from fan belt, power take-off, drive pulley, electric motor or small gas engine. Equally suitable for direct coupling. Pedestal type mounting with two bolt holes for 3/8" hold-down bolts. Standard 1/2" pipe thread inlet and outlet ports. Delivers 4.5 GPM at 1000 PSI at 2800 RPM with 3 H.P. Hardened steel gears turn in dense oilite bronze bearings. Rotation—clockwise facing shaft. Guaranteed trouble-free service. Ship. wt. 6 lbs. F.O.B. Chicago **22.50**

SAVE $30.30 ON THIS PESCO

HYDRAULIC CONTROL VALVE

ITEM #371V

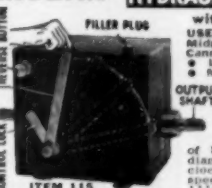
FOR SAFE POSITIVE CONTROL OF HYDRAULIC CYLINDERS AND MOTORS — ● BUILT-IN RELIEF VALVE—factory set at 1200 P.S.I. ● FOUR-WAY VALVE—to operate one double acting cylinder ● OPEN CENTER—with valve in neutral, cylinder is locked in position and pump is unloaded. ● SPRING RETURN TO NEUTRAL ● FULLY BALANCED PLUNGER ● EASILY STACKED INTO 2, 3, or 4 valve combinations for multiple cylinder operation. ● 8 gal. per min. capacity, at 1500 P.S.I.—3/8" pipe ports ● CONNECT PUSH RODS TO HANDLE FOR REMOTE CONTROL. ● EASY MOUNTING. ● LIST PRICE—$46.80. ● YOU SAVE $30.30. ● DIMENSIONS—9"x4½"x2½". Ship. Wt.—8 lbs..... **$16.50**

F.O.B. Chicago

To place phone orders call WEbster 9-3793

GROBAN HYDRAULIC SPEED REDUCER

with FINGERTIP CONTROL



ITEM 115

USE FOR: ● Reamer Drives ● Midget Cars ● Feed Mills ● Canning Machines ● Conveyors ● Lathes ● Milling Machines ● Motor Boats ● Cream Separators ● Garden Tractors ● Pumps. Variable output speeds from 0 to input speed available by moving control handle. Locking handle maintains setting. Use input power of 1/4 to 1½ H.P. Shafts 5/8" diam. Input rotation counter-clockwise facing shaft. Input speed 750 R.P.M. 7½"x7½"x11½". Gov't acquisition cost $428.00. Shpg. wt. 31 lbs. Complete with 2 qts. of oil and full instructions. F.O.B. Chicago..... **54.50**

BRAND NEW 1955!

FACTORY-TO-YOU-VALUE

PORTABLE ELECTRIC LIGHT PLANT

ITEM # 1008

POWER TO OPERATE:
● 8" Electric Saw, Electric Drills, Pipe Bender.
● Refrigerator, Deep Freezer, Incubator.
● Water Pump, Radio, Lights, Air-conditioner.

COMPACT—FITS IN THE TRUNK OF YOUR CAR

1000 watts output, continuous duty. 115 Volts A.C. 60 cycles, 9 amps. Powered by husky, easy starting Clinton engine. Engine and generator operate at 3600 R.P.M. for maximum efficiency at minimum weight. Both units are mounted on welded base, with heavy sheet metal belt guard. Generator is self-regulating, and is equipped with outlet box containing fuse and 3 A.C. convenience receptacles. Cost only 5c an hour to operate. Dimensions: Length 20½", Width 15½", Height 16". Shipping wt. 100 lbs. F.O.B. Chicago..... **149.50**

U.S. NAVY All Bronze CENTRIFUGAL PUMP

Equipped with 6" adjustable 'V' pulley, 2" dia. inlet and outlet. 160 GPM capacity. These all bronze Centrifugal Pumps are ideal for use as marine bilge pumps, circulating pumps, fire protection or irrigation, car washing, dewatering, basement sump pumping, lawn sprinkling. Will pump water, oil, brine, gasoline, DDT, and sulphur compounds. Inlet and outlet take hose with 2¼" inside diameter. Dimensions: 11"x8"x11".

ITEM # 384

Total Head-feet	Speed	H.P.	GPM
25	3600 RPM	3	180
35	3000 RPM	1¼	90
20	2400 RPM	½	75

Back plate may be rotated for most convenient inlet position. Gov't acquisition cost $96.00. Shipping weight 31 lbs. F.O.B. Chicago..... **29.50**

RUGGED!! **25 TON** MASSIVE!!

CAPACITY

HYDRAULIC CYLINDER

● ALL STEEL CONSTRUCTION
● 8" BORE—15" STROKE
● DOUBLE ACTION

ITEM #1815

● 50,000 LBS. PRESSURE WITH 1000 P.S.I. PUMP OUTPUT.
● UP TO 70,000 LBS.—CAPACITY ON INTERMITTENT SERVICE.
● SOLID STEEL 2½" PISTON ROD
● 1" PORTS
● OVERALL DIAMETER—10½"
● DISTANCE BETWEEN CENTERS—28¼" CLOSED—43¼" OPEN.

IDEAL FOR:

★ HYDRAULIC PRESSES ★ DUMP TRUCK HOISTS ★ TD-18, TD-24 INTERNATIONAL HARVESTER DOZERS AND GRADERS ★ LEVELING RAMPS ★ INDUSTRIAL MACHINERY ★ ROAD MACHINERY ★ FARM MACHINERY ★ HYDRAULIC TAIL GATES

Replacement cost—$310.00.
Shipping Wt.—185 lbs.
SPECIAL PRICE
F.O.B. Chicago..... **95.00**

DEPTH CONTROL

HYDRAULIC CYLINDER

● ALL STEEL DOUBLE ACTING HYDRAULIC CYLINDER
● 3½" BORE—8" STROKE
● 1½" SOLID STEEL, STRESS-RELIEVED, GROUND, POLISHED AND CHROME PLATED PISTON ROD
● STANDARD ½" PIPE THREAD PORTS
● MOUNTING CLEVIS AND ROD CLEVIS TAKE 1" DIAMETER PINS.

ITEM #438

ASAE Farm Standard construction, center distance closed—20¼", opened—28¼".

FEATURING — Adjustable depth control, to set the cylinder stroke anywhere from 4½"-8".

IDEAL FOR USE WITH
● PLOWS ● DISC HARROWS
● HYDRAULIC PRESSES

Will lift 11,520 lbs., using 1200 lbs. per square inch of oil pressure from the pump.

Regular list price $46.50. Shipping Wt.—26 lbs.
SPECIAL PRICE—
F.O.B. Chicago..... **$24.50**

ORDER DIRECT FROM AD
SATISFACTION GUARANTEED
Send Payment Or Purchase Order Today

FREE SPRING-SUMMER EDITION
1955 CATALOG, 52 PAGES, chuck-full of unsurpassed War Surplus Equipment Bargains for farm, home, factory, workshop. Write letter today.

GROBAN SUPPLY CO. Dept PS-4
1139 S. WABASH AVE., CHICAGO 5, ILL.

1955 CATALOG—Send 35¢

55 models for '55. See World's finest line before you buy. Rated tops in design, styling, performance by the experts. '55 Catalog plus booklet "Boat Selection, Operation, Maintenance" $1.00

Custom-Craft
THE ORIGINAL "PACKAGED"
BOAT KITS

BOAT PLANS AND FULL-SIZE: PATTERNS

Over 100 Modern plans and full size patterns. Racing classes, cruisers, inboards, outboards, sail boats. By famous designers. 6' to 30'. DESIGN CATALOG only 35¢. For Design Catalog plus boat building handbook send $1.00.

CUSTOM-CRAFT (DEPT. B) BUFFALO 7, N.Y.

SUPER-LIGHT LEVEL
HAS MAGNIFIED VIALS!

EMPIRE ACRA-LITE No. 1521

A craftsman's dream! Acra-Lite Magnesium Level is ONE THIRD Lighter — for easier, faster handling. Easier to read, too. Super-accurate vials have "Full-Vue" magnifying cover plates. Get YOURS today — at your dealer, or order direct.

New Empire Acra-Lite Magnesium Level No. 1521,
24" Only 28" 48"
$6.70 $7.60 $13.50

EMPIRE LEVEL MFG. CO.
10930 W POTTER RD., DEPT. PS, MILWAUKEE 13, WIS.

NOW! SAVE MONEY ON YOUR OWN CUSTOM HI-FI MUSIC SYSTEM

free!

ALLIED'S 64-PAGE HI-FI BOOK SHOWS YOU HOW

Send for "This is High Fidelity"
the FREE book that tells you everything you'd like to know about Hi-Fi

DO IT YOURSELF

UNITS JUST PLUG IN

Install in your own fine cabinetry or in existing cabinets

Install in bookshelves or built-in wall

Here's your guide to an easy understanding of Hi-Fi—the new electronic way to bring lifelike music into your home. Shows you how to select a custom Hi-Fi music system for your home at no more than the cost of an ordinary phonograph. Tells you what to look for and how to save money on each unit. Shows many handsome, practical do-it-yourself installation ideas. Offers you the world's largest selection of complete systems as well as individual amplifiers, tuners, changers, speakers and accessories from which to make your money-saving choice. If you love your music you'll want this helpful ALLIED Hi-Fi book. Write for it today—it's FREE.

FREE HI-FI BOOK

ALLIED RADIO
America's Hi-Fi Center

ALLIED RADIO CORP., Dept. Z-45
100 N. Western Ave., Chicago 80, Ill.

☐ Send FREE 64-Page Hi-Fi Book

Name.....

Address.....

City.....*Zone*....*State*.....

DRILL • SAW • REAM • CUT ALL WITH ONE DRILL BIT!

BEAVER SPEEDSAW DRILL BITS

ONLY $2.45 each • 3 for $7.00 Ppd.

Can be used on any electric drill, drill press, lathe or milling machine. These new improved side cutting drill bits have "tapered-flutes" for additional strength to prevent breakage, and are made of the finest quality American High Speed steel to insure long life. Readily cuts: steel, wood, plastic, aluminum, etc. 3½" long. 2" side cutting section, ¼" diameter. Specify types desired: 1. All-Purpose 2. Wood 3. Heavy Metal. Money back guarantee! Resharpened free. Save time and money with this multi-purpose drill bit—ideal for enlarging holes, making circles, scrolls, etc. Buy them from your dealer today! Or send cash, check or money order NOW!

SET OF 3 MAKES AN IDEAL GIFT.
Distributor inquiries invited.

BEAVER DRILL & TOOL COMPANY
701 East 5th Street Div. PS-4 Kansas City 42, Mo.

FREE TOOL OFFER!

Free, information-packed, illustrated folder shows you how you can now spray Paints, Varnish, Shellac, Lacquer, Enamel, Insecticides, Fertilizers, etc. *without* the use of air pressure. Amazing new all-metal *complete* Spray Kit uses no air compressor; no need to buy extra motors. Versatile spray gun is self-contained, operates on 110 Volt A.C. current. SPECIAL NEW FEATURES—*Automatic Paint Strainer, Jewel Nozzle Disc, Polyethelene Distance Tubing, Self-Cleaning:*

Special Free Tool Offer Included With Complete Information.

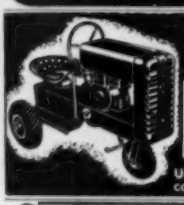
POWER PRODUCTS, INC., Super Jet Division PS
175 East 87th Street New York 28, New York

x-acto
KNIVES • TOOLS
HANDICRAFT KITS

NO. 77
VIZI-DOME
WOODCARVING
SET $3.60

X-ACTO, INC.
48-41 Van Dam St.
Long Island City, N. Y.

Send 20¢ for 28-page Catalog



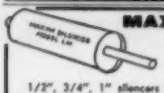
BUILD YOUR OWN

LAWN AND GARDEN TRACTOR
USE ONLY WRENCH AND SCREWDRIVER
Complete kit with all parts fitted and finished. Requires less than three hours assembly time. ACCESSORY KITS for Lawn Mower, Roller, Dump Cart, Hay Mower, Rotary Tiller, Snow Plow, Circular Saw, Emergency Light Plant.

UNITED STATES FORGE & FOUNDRY CO
CONSTRUCTION EQUIPMENT DIV. PULASKI NEW YORK

MAXIM EXHAUST SILENCER

For POWER MOWERS — GARDEN TRACTORS



Eliminates exhaust racket on 4-cycle air-cooled engines. Install it yourself. Order 1/2", 3/4", 1" silencers for 13/16", 1-1/16", 1-5/16" exhaust parts (inside diam.) respectively. Prices postpaid: 1/2", $3.95; 3/4", $5.95; 1", $7.95. Sorry, no C.O.D.'s.

Ask your dealer or write direct
THE MAXIM SILENCER COMPANY
122 Homestead Avenue, Hartford 1, Connecticut

NOW-THE QUICK-WAY TO SHARPEN ALL CIRCULAR SAWS

NEW

Model PG-12 Complete. No extras to buy. $16.50 Postage Paid

Model PG-12 sharpens, joints, gums, and retooths all cross cut, rip, combination, miter, and planer blades up to 12" in diameter. Two precision index plates give versatile, accurate sharpening. Guarantees precise spacing of teeth. New safety rest prevents tilting and gouging of blade. Save time and money. Special $3.00 grinding wheel also included for use on your own power table. Fits regular or radial swing tables.

Order today. Send check, cash, or money order. We pay postage.

QUICK-WAY SAW CO.
100 Moraby Drive, Painted Post, N. Y.

THE SURE WAY TO

KNOW

YOU ARE BUYING A FINE POWER DRILL

For top performance, choose the power drill equipped with a Supreme Chuck. The finest in quality and precision. Or replace your old style chuck with a Supreme. See your hardware dealer.

Supreme Chucks BRAND

SUPREME PRODUCTS, INC., 2222 S. CALUMET, CHICAGO 16

KIT CONTAINS

Get This *Cummins* Portable Workshop

Perm-Align Drill With 4-Finger handle, hardened gears.

Saw Attachment

7 Drill Bits

Sanding Discs

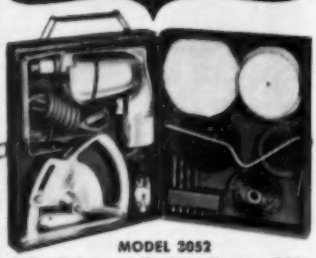
Paint Mixer

Grinding, Buffing, Wire Wheels

Bench Stand

Polishing Bonnet

Arbor Set



MODEL 3052

35-Piece Drill-Saw Kit

Finest buy in a complete Portable Electric Workshop. Builds, fixes most anything. Cabinet-style case mounts on wall or carries to job. All pieces easy to remove, put back in place. Includes famous Perm-Align ¼" Drill and valuable Saw Attachment at this low price. Your MONOGRAM on case at no extra cost. (Slightly higher in Canada). **$39.95**

MADE BY

WRITE FOR CATALOG

John Oster Manufacturing Co.

5055 N. Lydell Avenue, Milwaukee 17, Wis.
Cummins in Canada: 334 Lauder Ave., Toronto 18

COPYRIGHT 1955 JOHN OSTER MANUFACTURING CO.

TWINSULATE* NOW

and sleep up to 15° cooler this summer

Insulate Your Home with Gold Bond *TWINSULATION*

INSULATE your attic now with remarkable new double-action Gold Bond Twinsulation, and you'll; 1. Keep your home up to 15° cooler this summer. 2. Prepare your house for efficient air conditioning. 3. Slash your present fuel bills up to 20% next winter and every winter!

Pays for itself...then pays YOU!

TWINSULATION gives you so much comfort, so many savings because the rock wool center *blocks* heat and the aluminum covering *reflects* heat from either side. Adds extra fire protection, too. Stiff, rugged blankets are easy to install with stapler or nails. Mail coupon for fact-packed new Gold Bond Insulation booklet.

NATIONAL GYPSUM COMPANY, BUFFALO 2, N. Y.

Send for complete How-To-Do-It Booklet on insulating *your* home ... then see your Gold Bond dealer!

NATIONAL GYPSUM COMPANY
Dept. PS-45, Buffalo 2, N.Y.

I enclose 10¢ for "Home Insulation" booklet.

Name .....

Address .....

City ..... *County* ..... *State* .....

*Twinsulation is a Reg. T. M. of National Gypsum Company

TRUE TEMPER®
Hammer News

NEW NO-SHOCK HAMMER
Handle won't break . . . ever!

Here's the new True Temper ROCKET—completely different from any other hammer in the world. It's shock absorbing, it's indestructible in normal use. The handle is a tube of boron alloy steel. It won't bend or break when you pull the heaviest nails. The head can't fly off, can't loosen. It's locked to the shaft permanently.

The grip is a thick rubber-fiber cushion that soaks up the impact of hammering. The ROCKET is perfectly balanced—the best-feeling hammer you ever swung.

The grip won't slip, even when wet or in a gloved hand. It's bonded to the shaft, can't turn or loosen.

See the True Temper ROCKET hammer at your hardware or building supply store. $4.35*.

* Slightly higher in West

Carpenter's Apron PROFESSIONAL QUALITY **Only 39¢**

Select a True Temper hammer and get this carpenter's apron for only 39¢. High-quality duck. Pockets for nails, tools. Chart shows nail sizes. Practical, snappy. Limited offer, get yours now.

TRUE TEMPER®

Finest quality in hammers, hatchets and axes • Lawn, garden and farm tools • Shovels • Shears • Fishing tackle • Golf-club shafts

---

Briggs & Stratton 2-H.P., 4-Cycle GAS ENGINE
AIR COOLED — FULLY GUARANTEED

Reg. Price $68.00
SPECIAL OFFER while they last **$37.50** fob **SAVE!**

Powers Farm, Home & Industrial Tools
• Garden Equipment • Pumps • Compressors

GOV'T SURPLUS Briggs & Stratton leads the world in dependable, trouble-free performance. A precision-built 2-horsepower, 4-cycle engine with advance styling and economical operation. Kick or rope start—sure fire ignition in all weather. Positive, automatic splash-lubrication system. 2 Qt. gas tank. Float feed carburetor with adjustable idle speed and automatic governor. Oil bath air cleaner. Complete with muffler. 3 Piston rings for added compression. 2000-3600 RPM adjustable speed range.

SUPPLY LIMITED! IMMEDIATE DELIVERY! ORDER FROM AD
FREE CATALOG of Compressors, Generating Plants, Motors
ROBERTS ELECTRIC CO., Dept. S-281, 849 W. Grand, Chicago 22, Ill.

LOOKING FOR THE BEST PLIER TO BUY?
GET
CHAN NEL LOCK
TRADE MARK REG — U. S. PATENT OFFICE
CHAMPION DeARMENT TOOL CO., MEADVILLE, PA.

DO MORE PLANING JOBS WITH LOW COST BELSAW

LOW DOWN PAYMENT EASY TERMS

Exclusive MONEY-MAKING Features: • Full 12½" x 6" capacity • Power feeds at 24' a minute • Provides for Grinding Knives in the Cutterhead • Attachments for Jointing, Rabbeting, Tongue, Groove, Matching. Convert low cost rough lumber into high priced cabinet finished stock . . . Easy to make flooring and popular patterns. Send today for free literature and prices.

Belsaw Machinery Co., 1025 Field Bldg., Kansas City 11, Mo.

ELECTRIC WELDER AC or DC 110 Volt

The "Little Marvel" all-metal welder. 5-year written guarantee. Welds 1/8" metal or money back. Repairs tanks, tools, fenders, machine parts, etc. Complete with everything—rods, unit, eye shield, directions. $6.45 plus 50c postage. Flame torch accessory for soldering, cutting, brazing $3.95 complete with carbons, brass rods, flux. $2.00 deposit on C.O.D. ¼ inch Transformer Welder $19.95 F.O.B.

$6.45 Complete

ESSAY MFG. CO., Dept. 47, Quincy 69, Mass.

NEW WAY TO CUT PERFECT GROOVES WITH CIRCLE SAW!

Just dial any of 40 cuts. Parallel, clean, no sanding! Leave on saw for regular cuts. For ½, ⅝, ¾ and 1" arbors. At dealer's or order direct!
Send for free booklet

Only **$4.95** per set

WARREN DADO WASHERS CO.
Dept. 44 P.O. Box 98, Detroit 2, Mich.

COUNTRY SQUIRE TRACTOR *with* ROTARY, REEL TYPE or SICKLE MOWER

CUT GRASS THE EASY WAY

ALSO plows, harrows, cultivates, plants, rakes hay, sprays, bulldozes, plows snow, saws cord-wood. Write for FREE CATALOG

COUNTRY SQUIRE TRACTOR CO.
P.O. BOX 107, A-4A MUSKEGO, WIS.

21 PC. ¼" & ½" DRIVE SOCKET SET

A $14.95 Value **OUR PRICE $5.95**

plus 50c handling & postage.

Perfect for AUTOMOTIVE, TV, RADIO & HOME APPLIANCE Repair! Consists of eight 12 point sockets, sizes 7/16", ½", 9/16", ⅝", 11/16", ¾", ⅞" and 15/16" plus an 8" extension, L handle, reversible ratchet and reversible screw driver. In addition, there are six ¼" Drive Sockets size ¼", 5/16", 11/32", ⅜", 7/16" and ¼" square, complete with L handle and extra large extension with shock-proof plastic handle. All sockets, extensions, wrenches, ratchets, etc. fit easily into a handy metal carrying tray—all are bright sheen finished and precision constructed for long life.

29-Piece Vanadium Chrome DRILL SET $6.95

plus 50c pp & hdlg.

Especially made for speed drilling. In sturdy indexed container. Finest alloy steel drills, hardened and precision ground to the sharpest, longest-lasting cutting edge obtainable; will easily and cleanly bite through hardwoods, plastics, aluminum, iron, and the toughest steels. Unconditionally guaranteed for thousands of drillings. Full jobber-length. Sizes by 64ths from 1/16" to ½". Also available with Turned Down Shanks to fit all ¼" drills. In individual pocket tool roll for **$8.95** ppd.

36" FLEXIBLE SHAFT with 100 Pc. ACCESSORY KIT

A $12.95 Value **OUR PRICE $4.98**

plus 50c pp & hdlg.

This handy flexible shaft with complete handle increases the utility of your electric drill, electric motor, grinder or drill press where ¼" shank can be attached. Easily attached to do grinding, carving, drilling, sanding, polishing, buffing, slotting, engraving, etching, etc., on wood, metal, glass and plastics. Shaft is tamper proof, sealed and designed for life-time service. Can be operated at speeds up to 6000 RPM. Accessories include 2 spindles, sanding discs, buffers, pads, etc.

Send check or M.O. C.O.D. fee extra. Money Back Guarantee.

SCOTT-MITCHELL HOUSE, INC.,
Dept. MS-43, 611 Broadway, New York 12, N.Y.

New HOME WORK BENCH

Craf Top® *A sturdy, handsome Work Bench for your home.*

Splinter-proof Resinwood facings. Enameled, heavy steel frame. Rugged . . . Attractive . . . Low, low cost.

In the East and West — HALLOWELL Craf Top®

In the Middle West — HANDEE Craf Top

If CrafTop Home Work Benches are not yet available in your area, write, giving the name of your dealer, to:

Rock Island Millwork Company
Rock Island 12, Illinois

Name _____

Address _____

City _____ State _____

Dealer's Name _____

Need an extra BEDROOM?

Build it yourself . . . It's EASY with Gold Bond Gypsum Wallboard!

Turn an unfinished second floor or other unused space into a bedroom like the girl's room above. Build it quickly and easily with fireproof Gold Bond Gypsum Wallboard. One panel covers up to 48 sq. ft. Score with a knife, snap off to desired size, then nail up just like wood. No warping or buckling. The handy Gold Bond Tape Joint Kit conceals wallboard joints, leaves walls smooth and seamless to take any decoration.

NATIONAL GYPSUM COMPANY
BUFFALO 2, NEW YORK

Send in coupon below for FREE BOOKLET showing how easily Gold Bond Wallboard can give you new rooms in your present home.

MAIL COUPON TODAY

NATIONAL GYPSUM COMPANY
Dept. PS-45, Buffalo 2, N. Y.

Please send me a free copy of your Gold Bond booklet, with full application instructions.

Name _____

Address _____

City _____ *Zone* _____ *County* _____ *State* _____

WAR SURPLUS AND OTHER BARGAINS SAVE UP TO 90%

SENSITIVE ALTIMETER to 16 Ft. Increments. Famous Pioneer! 0 to 35,000 ft. (inches of Mercury). Tested and inspected in our own instrument lab. Guaranteed perfect. Approx. Govt. Cost $150. NOW ONLY **$13.95** PREPAID!

PIONEER MAGNETIC COMPASS
For boats, trucks, cars. By Pioneer Instrument Co., Div. of Bendix. No. 1829-2A. Contains screw-type heeling compensator, removable drawer-type compensator, screw-type horizontal compensator and spider-type compensator. All devices for elimination of errors caused by effects of magnetism. Has constant deviation corrector and course setter. Rotable dial engraved with compass card graduations. Complete with book of instructions, light and mounting screws and shock mounts. Shpg. Wt. 10 lbs. Approx. GOVT cost $400. NEW. **$16.95**

MICROMETER DEPTH GAUGE
With 3 rods to measure all depths from 0 to 3 inches by thousandths. Hardened tool steel lead screw has full 1 inch run. Base is 2½" long, hardened ground and hand lapped. Accuracy guaranteed. Mfd. by Millers Falls Co. GOV'T COST approx. $30. NEW—**$10.95** ppd. USA. In velvet case.

MICROMETERS Chrome plated, precision engineered, carefully tooled to give long life. All new 0-1" cap. **$2.25** ea., 1-2" cap. **$3.50.**

"HELIOS" ORIGINAL TOOLMAKERS VERNIER CALIPERS
ULTRAPRECISION — Imported. Used by machinists at Lockheed, Douglas, Bendix, GM, RCA, GE. Model 51/3E. Genuine Helios. Hardened lapped precision surfaces. 1/1000" and 1/128" graduations. Handy slide roll and thumb lock. Quick, accurate depth. A $35 value. Satin finish. ALL NEW, just **$6.50.** Leather carrying case, $1 extra.

NEW PUMP AND MOTOR
Pump has 1" connections, built-in relief valve, adjustable up to 1500 lbs. Max capacity 8 GPM. 1½ H.P., 24-volt motor. 4000 RPM. Can be used on 12 or 36 volts. Govt. cost approx. $350 — our price — NEW — **$9.95.**

AUXILIARY POWER UNIT
Ideal for your shop, camp, cottage, farm, trailer, home, boat or mines. Makes a terrific welder for any sized job. 2 cylinder, horizontally-opposed air-cooled engine. Complete with AC-DC generator. On DC will supply 200 Amps at 24-28 Volts; on AC will supply 10.5 Amps—1200 Watt at 800 Cycle. The DC Generator rating at normal RPM, 5 KW. Operates on cheap gasoline. Economical. No batteries required. Dual Scintilla magnetos. Generator can be removed and engine coupled to other units for other purposes. Mfd. by Lawrance. Comes complete in fire-proof enclosure which cuts motor noise to a minimum. Shpg. wt. cased, 398 lbs., net wt., 139 lbs. Like NEW. Complete, guaranteed perfect. Govt. Cost $4770. Special Now—Model D1, 10 HP with AC-DC Generator described above—**$125.50**; also with 300 Amp Generator—**$157.50**. Model C2, with 160 Amp Generator, intermittent 220 Amps, 14.5 HP—**$137.50**.

P1 GENERATORS
Electric Auto-Lite, 200 Amps, 24 Volt, 4400 RPM, Dandy arc welder. Wt. 53 lbs. Approx. GOVT cost $450. Like NEW, **$12.50** incl. easy diagram.

ARC WELDER ELECTRODE HOLDER
For arc welding. Takes all popular size rods, 300 to 500 Amps. 60-deg. angle. 8¾" long. Mfd. by Allison. Purchased from Navy surplus. New. Boxed. Gov't cost approx. $10.50. Weighs 19 oz. Now just **$3.95** ppd.

EXCELLENT—FIRST QUALITY "High-Test" SPEED DRILLS
Complete set of 29 drills from 1/16" to 1/2" by 64ths. Full jobber's length. Wt. 2-1/2 lbs. A $24.95 value. New. With 1/4" shank — **$9.95.** With straight shank — **$8.95.** Complete with case and size markings. Order now!

FIELD COOKING UNIT & HEATER
Terrific for hunters, ranch, home, farm, civilian defense, boat, camp, trailer, barbecue, etc. Burns any type gasoline. Burner 10¾" dia. Unit approx. 23" x 21" x 10". Has 2 tanks (21½" x 5¾") with welded seams, 3 brass valves, 3 air filters, air gauge to 80 lbs. Can use as air tank for compressor or fill with liquid for spraying. NEW Korean war surplus. Wt. 95 lbs., boxed. Approx. GOVT cost $150. Complete with 2 spare energisers and orifice cleaner (compare this price) — **$10.50**

PRECISION GROUND SQUARES
Production engineer's Squares. Accuracy guaranteed. Mfd. by Wright & Moore, Sheffield, Eng. Square blades hardened & tempered. Individually packed in wood box. Brand NEW. Fraction of original cost. 2"—**$2.25**, 3"—**$2.50**, 4"—**$2.75**, 5"—**$3**, 6"—**$3.25**, 9"—**$6.50**, 12"—**$8.25**.

Send 25¢ for big 1955 catalog. Bargains for everyone. Check, Money Order or Cash. 25% deposit on C.O.D. orders. Prices F.O.B. Culver City, Calif., unless otherwise stated.

AIRBORNE SALES CO. INC. DEPT. PS 455
8501 Stellar Drive Culver City Calif.

$6.95 DRAINS cellars, cisterns, wash tubs; **IRRIGATES - CIRCULATES - SPRAYS**

SUBMERSIBLE! WON'T RUST! WON'T CLOG!
Original Type P—"Pump of 1,001 Uses"—house, garden, farm. Up to 3,000 GPH; 450 GPH 80' high; or 1800 GPH from 25' well. Uses 1/6 to ¾ HP motor. Motor coupling included. Oil-less bearing. Stainless steel shaft. 1" inlet; ¾" outlet. . . . **$6.95**

Exclusive Double-Bearing Heavy-Duty Pumps
TYPE X—2 oil-less bronze bearings for smoother running; longer life. For every pumping need. Up to 7,500 GPH. Use ¼ to 1 HP motor. 1¼" inlet; 1" outlet. Stainless steel shaft. Submersible **$10.95**
TYPE XB—Same as Type **X**, but with grease-sealed outboard rubber-mounted ballbearing plus oil-less bronze bearing. Best for belt drives. Not submersible. **$12.95**
ALL BRASS JET for SHALLOW to 50' DEEP WELL Up to 50 lb. pressure. Ideal for water systems, sprinkling, irrigation, etc. Use with Type X or XB Pump. **$5.95**

Postpaid if cash with order.
(West of Miss., add 50¢)
MONEY BACK GUARANTEE
Centrifugal and Gear Pumps in all Sizes

$10.95

LABAWCO PUMPS, Belle Mead 4, N. J.

VARIABLE SPEED HYDRAULIC POWER TRANSMISSION

It has Infinite Speeds 0 to 550 Reverse Automatic Overload Protection: Adjustable Torque up to 180 inch pounds. ⅝" Input and Output Shafts. It will handle ¼ to 1½ H.P. Motor. Case measures 7½" long 7" high 6½" wide. VALUE OVER $300. Shipping Wt. 25#. On C.O.D. Orders we require a 10% Deposit. only **$54.50** Fob. Chicago

DIRZUIS MACHINE SHOP "M", 1423-25 52nd Ave., Cicero 50, Ill.

Also ADULT 2 Passenger "Eshelman" SPORT CAR
1/5 the cost of any other auto
70 Miles per Gal. Free Catalog.

ESHELMAN ROTARY TILLER FOR BETTER GARDENS

Also Walking Tractors from **$69**

Replaces plowing, discing, cultivating. Turns virgin ground into Garden Bed in 1 operation. Women can operate. Free Catalog. **Eshelman,** Dept. T-44, 109 Light St., Balto., Md.; 333 N. Mich. Ave., Chicago, Ill.; 6067 Sunset Blvd., Los Angeles, California.

TEST TV—RADIO TUBES
Yourself with UNATEST 51. Own your own tube tester for less than the cost of one service call. Buy your tubes at discount! SAVES MONEY the first time it's used. Mahogany Case—110 volt AC Tests all popular size tubes. Simple to operate —Fully guaranteed. ORDER TODAY! ONLY $5.00—Post Paid. Send Cash, Check or M.O.

$5.00

BAUMBACH ENG. CO. Dept. P-54, 10147 Halbrent San Fernando, Calif.

URANIUM AND METALS
Easily located with the new M-Scope Detector. Superior Performance. Prices $35.00 up. Monthly payment plan. Booklets "How to be a Successful Uranium Prospector"—"For Fun and Profit" free upon request.

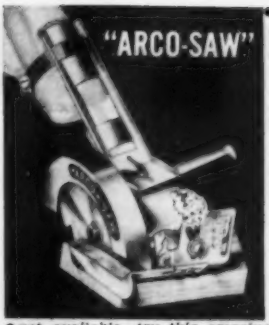
FISHER RESEARCH LABORATORY, INC.
PALO ALTO CALIF.

---

2 GREAT AUTO BARGAINS

NEW KING MIDGET for 1955, lower priced, improved performance. Drive it for 75¢ per week. Rider agents wanted, earn your own car. Also just out **King Midget-Junior** chassis, finely engineered, ready to run, and priced at less than the retail cost of parts. Agents wanted. Get all the facts—send 25¢ for literature, special prices and proposition on both cars, or $1 (refunded first order) for this plus actual assembly book and service manual.

MIDGET MOTORS MFG. CO., ATHENS 2, OHIO



CUTS 2x4's!

Fits any ¼" drill. Has same features as high priced Portable Saws. Over ¼ million in use! Complete with **Depth-Bevel-Rip Gages** for accurate cuts, **Right Angle Steel Gear Drive & Safety-Yoke** for safe one-hand operation and quick-cutting 5" **Safecut** blade..... **$12.50**

BLADES—5" Comb., Rip, Crosscut.....**$1.75**

SOLD AT BETTER HDWE. STORES. If not available, try this amazing tool on our **UNCONDITIONAL 10-DAY MONEY BACK GUARANTEE.** Send check or M.O. (ppd). C.O.D.'s—plus post.

ARROW METAL PRODUCTS CO.
Dept. PS-4, 140 W. Broadway, New York 13, N.Y.

MAGNETS 225 lb. PULL

GENUINE ALNICO—NEVER WEAKENS

AMAZING, PERMANENT MAGNETS—WILL NOT WEAKEN! NON-ELECTRIC

Retrieve guns, tackle, tools and other steel items from lake, river, plating tanks, drains or other hard-to-reach spots. Recover drills, taps, etc. from sweepings. Clear alley of harmful tacks, nails. Many other uses. Pays for itself quickly. GUARANTEED. Try any magnet one week. Money refunded if you are not well pleased.

No. S-725 (Weighs 54 oz.) Has pull of 225 lbs. on steel block $15.00
No. S-425 (Weighs 70 oz.) Has pull of 125 lbs. on steel block $ 8.50
No. S-575 (Weighs 18 oz.) Has pull of 75 lbs. on steel block $ 6.00
No. S- 30 Hobbyist assortment of six small magnets..... $ 1.50

Send Money Order or check. We pay postage. No C.O.D.'s.

MIAMI MAGNET COMPANY. 3240 N.W. 27th Ave., Miami 42, Fla.

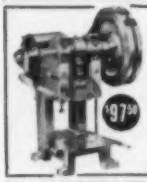
SHEET METAL BRAKES

Forms angles, locks, pans, etc. New eccentric clamps. All steel construction. Size 15"—16 gauge steel, $21.50; 36"—22 ga. $33.00; 48"—24 ga. $48.00. Floor Stand. $7.00

HAND PRESS BRAKE **$38.00**
FOLDER, 15"—¼ to 1—24 GA. **$16.50**
12" REACH HAND BRAKE ..... **$ 9.50**
SHEAR 7"—16 GA. STEEL **$12.50**

(Immediate delivery. Order cash or C.O.D., or send for folder)

VYKE MFG. CO., S-2439 15 St., Denver 2, Colo.



PUNCH PRESS

2 Ton Power Bench Type
Make Your Shop Complete
Powerful — Dependable — Economical

Easily make your own dies for light stamping, forming, riveting etc. Ideal for production or experimental work. Replaces more expensive presses. Uses ¼ H.P. motor. Weight 105 lbs. Fully guaranteed. Only $97.50 less motor. Write for free circular.

Dealer Inquiry Invited

ALVA F. ALLEN, Dept. PS, Clinton, Missouri

CONVERT YOUR TABLE SAW TO A JIG SAW IN 3 MINUTES WITH

CIRCLE JIG

This is not a toy. It uses standard saw blades. Cuts 2¾" thick stock—cuts to center of 16" to 24" board. Easy to install on any ½" or ⅝" table saw without machining, drilling or tapping—simply clamp on with ordinary wrench. Add a jig saw to your shop at this small cost.

Retail Price **$11.95**

See your dealer or send $11.95 to

VERSA TOOL MFG. CO. INC.
401 Lake Ave. Dept. S Racine, Wis.

ADD-A-ROOM NOW!

...it's easy with triple value Gold Bond Insulation Board

GOLD BOND Insulation Board, Plank and Tile decorate, insulate *and* sound condition all at the same time.

Whether adding a new room or remodeling an old one, give it smart good looks with these prefinished planks and tiles in ivory or combinations of pastel colors. The tiles make a handsome ceiling and increase the rest and quiet of your room. Ready-cut and ready to install, there's no painting or decorating needed. Gold Bond Planks and Tiles are made from "live" southern pine fibres, keep furnace heat *in*, and summer heat *out!*

Send today for your copy of "Interiors by Gold Bond," the fascinating booklet that has helped thousands to new home beauty.

NATIONAL GYPSUM COMPANY
BUFFALO 2, N. Y.

MAIL COUPON TODAY

NATIONAL GYPSUM COMPANY
Dept. PS-45, Buffalo 2, N. Y.
Enclosed is 10¢. Please send me my copy of "Interiors by Gold Bond."

Name.....

Address.....

City..... *Zone*..... *State*.....

Just Off the Press!

Mammoth 1955 Wholesale Tool Catalog

TOOL CATALOG

YOUR NAME

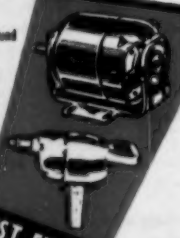
The opportunity now awaits you to own and operate your own business on a part time or full time basis in the lucrative field of HARDWARE, HAND TOOLS, FANS, POWER TOOLS, MOTORS, PAINTS, etc., or BUY TOOLS FOR YOUR INDUSTRIAL OR INSTITUTIONAL USES.

You Can Buy Nationally Advertised Tools, Etc.,

NO INVESTMENT REQUIRED. BUY AS YOU NEED IT. A MILLION DOLLAR INVENTORY AT YOUR FINGER TIPS.

Discount UP TO 50%

$1.00 refund on first purchase or refund if you are not 100% satisfied.



Every one needs tools. Meet the demands of the growing "Do-it Yourself" markets. Sell direct from the jumbo buying guide—your cost is known only to you.

JUST FILL OUT COUPON

ENCLOSE $1.00 FOR DEALERS CARD & 1955 MAMMOTH TOOL CATALOG.

SILVO HARDWARE COMPANY
Dept. PS-4, 108 Market St., Philadelphia 6, Pa.

I am enclosing $1.00. Rush me your dealer's card and big Catalog Today. If I am not completely satisfied with your plan, I understand that I can return the Dealer's Card and Catalog for refund, and if I decide to order, my $1.00 will be deductible from my first order.

NAME .....

ADDRESS .....

CITY ..... ZONE ..... STATE .....

BUILD YOUR OWN POWER TOOLS - WITH GIL-BILT PARTS KITS

TILT/ARBOR SAW

- 27x28 in. table. 13½ in. capacity in front of blade.
- 10 in. blade cuts 3¼ in. deep, tilts full 45 degrees
- Floor model 34" high, table always stays level
- New Departure ball bearing arbor, ⅝" precision shaft turned down for ⅝" bore blades, alum. housing, shipped ready to run
- Jackscrew and 4½ in. dia. handwheel lowers and raises blade
- Cast aluminum miter gauge and self-aligning rip fence guide

GIL-BILT Metal Parts Kit includes Plans, ball bearing arbor, miter gauge and bar, rip fence guide, dado insert, lock knobs, jackscrew mechanism and handwheel, and all other metal parts (less blade) $22.95
Same Kit with 10" Combination Blade . . $25.90
Same Kit with 8" Combination Blade . . $24.90

GIL-BILT 12-INCH BAND SAW

Ball bearing drive, rigid cast aluminum wheels, rubber tires. Handles stock up to 6 inches thick. Cuts to center of 24" circle. 18x18 inch tilt table. Capacity and performance of band saws selling for $80 and up. **Plans and all metal parts in kit with ½" blade . . $23.95** Return Kits in 10 days for refund if not satisfied. *For shipments up to 600 miles, add 5%; over 600 add 10%. Amount in excess of actual postage will be refunded.* Order Kit now, or order Plans at $1.00 each and Kit later less cost of plans.

PLANS only $1.00 EACH POSTPAID

Write for *FREE* Catalog.

Also Available: Plans & Parts Kits for 18" Band Saw, Belt Sander, Spindle Shaper, 8" Tilt-Table Saw

GILLIOM POWER TOOLS Dept. 70-D, Lambert Field St. Louis 21, Missouri

WELD BRAZE SOLDER CUT

4 WAY WELDER

ONLY $14.75 f.o.b. factory

Complete with Twin Carbon Arc Torch and accessories . . . to handle all metal-craft work.

Acclaimed by thousands of Homeowners, Mechanics and Hobbyists as the welder of 1001 uses. Easily operated from properly wired 110 volt AC or DC line. **The ideal gift with a life-long use** . . . Order today on 10-day money-back guarantee.

FOUR-WAY WELDER CO., Dept. F3-4
1810 S. Federal St. • Chicago 16, Ill.

BRONZE FOUNDRY

Schools and Home Workshops

Make your own castings of aluminum, copper, bronze, silver. Foundry sets are available in three sizes including 2400 Deg. F. blast Furnaces, $22.50; $29.50; and $42.00 f.o.b. Kansas City. Free Circular.

KANSAS CITY SPECIALTIES CO. P. O. Box 6022, Dept. S-4 KANSAS CITY, MO.

Wholesale! TOOLS! GUNS! CAMERAS!

BUY TOOLS PHOTO EQUIPMENT, SPORTING GOODS, JEWELRY AND THOUSANDS OTHER NATIONALLY ADVERTISED PRODUCTS AT BIG DISCOUNTS SAVE ON OWN PURCHASES BIG PROFITS SELLING TO OTHERS. *POSTCARD BRINGS FREE COPY "THE WHOLESALE PLAN"*

Get up to 40% off

AMERICAN BUYERS SERVICE

631 LINDEN AVE., DEPT. 8, BUFFALO 16, NEW YORK

MAKE UP TO $5 AN HOUR WITH EASISHARP

MONEY MAKING SALES PLAN FREE

Big profits in your spare time sharpening scissors. We show you how to start making money immediately. This is your chance now to have your own business and a steady income. Sharpen a pair of scissors in less than two minutes! A child can operate it. Weighs only 10 lbs. Every home, barber, tailor—everybody uses scissors and all need sharpening 2 to 4 times a year. Don't let someone beat you to this opportunity. Write immediately. Manufacturers of Famous Quiksharp Knife Sharpener.

SERR-EDGE MACHINE CO., 9733 Lorain, Cleveland, O.

GIGANTIC SAVE-TO-70% **MAIL SALE** WAR SURPLUS EXCESS INVENTORY BANKRUPT STOCK

AIR POWERED TREE TRIMMER

• Buy of the year! Prune with air—fast, easy. Simply press the button. Powerful air cylinder does the rest. Razor Sharp cutting head.
• Operates from any small home air compressor, works on 40-70 lbs. air. Total length 10 ft. Cuts limbs to 1½" or better. Reg. List $69.50 . . . . . Sale **$19.51 Ppd.**
• Compressor, tank, hose and trimmer (use your motor) . . . . . Special **$46.71 Ppd.**

GEAR HEAD AC MOTOR

• Valuable leading make **gear head motor.** 115-volt 60-cycle. 1/10 h.p. output. Speed 450 r.p.m. High torque.
• Using inexpensive rheostat (not furnished) can be set at any speed down to 25 r.p.m. (or less)
• Dozens uses—Window displays, industrial, sign rotation, etc. Really marvelous unit. Govt. Cost $34.95 . . . . . Sale prepaid **$9.61**

REVOLVING SIGN ASSEMBLY

• Spectacular airway beacon unit. Your electric sign attached to slowly revolving arms attracts tremendous attention.
• Current carried to revolving 30 in. arms through slip rings and brushes. Unit complete less driving motor. Use your 1/6 or 1/4 h.p. motor. Signs easy to mount. Gov't. Cost over $600.00. Sale Prepaid **$66.50**

TOOL and PARTS CABINET

• A deluxe special. Exceptional Army Wood Cabinet for tools and parts. Use home workshop, business, trucks, etc.
• Finest Cabinet 28"x21"x 20"—3-section body—six easy pull drawers — 22 separate compartments. BRAND NEW. Wt. 91 lbs. Govt. Cost $78.25 . . . Only $7.99 FOB Vanceburg, Ky.

ARMY POWER PLANTS

• Extreme bargains in DeLuxe Army plants and generators. New condition, guaranteed perfect. Be prepared for power failure in peace and war! Plants, 1,000 w, 115-v, 60-c **$189**
Plants, 2,000 w, 115-v, 60-c **289**
Plants, 2,500 w, 115-v, 60-c **291**
Plants, 3,000 w, 115-v, 60-c **348**
Plants, 15,000 w, 115/230-v, 60-c . . . **781**
Plants (FOB Lincoln) 25,000 w, 60-c, 115/220/440-v, 1 and 3 phase **$992.50**
Plants, 7,500 w, 120-v, 60-c **$91.50**
Generators AC and DC low as **$8.00**
Plants, DC, 28-v, 1800 w **69.50**

AIR COMPRESSORS AND TANKS

• For painting, cleaning, tires, termites. Build your own. Finest. Save 60%.
• **Deluxe Kit**—Compressor, tank, gauge, regulator, spray gun, fittings. Instructions. List $80 . . . . . Sale **$46.95**
• **Compressor** (1-cyl.) **$18.91.** Govt. Air **Tanks $6.79.** Air **Regulators $2.79.** Pressure **Gauges $1.69. Spray Gun** (finest) **$9.81. Automatic Switch $4.95.** Hundreds air items savings to 70%.

HYDRAULIC SPECIALS

• Build your own equipment. Save to 70%.
• Plow lift **Cylinder** (3" x8") **$11.95**
• **Cylinder** Special (1½"x4") . . . **$ 3.89**
• Other cylinders to 48"—bores to 3½"
• **Pump** (1,000 lb.) . . **$48.00. Valves**—one way or two way . . **$18.00.** Hyd. **Gauges** 0-1500 lb. **$3.49.**
• Many valuable hydraulic items. Save 888.

GAS-ELECTRIC CHAIN SAWS

• Marvelous buys in leading make electric and gas chain saws. Special demonstrator saws. Big savings. Saws low as **$89.50** Write for details.

SPECIAL OF THE MONTH!

Multi-PURPOSE SPRAY OUTFIT

• Ideal for orchards, weeds, cattle, insects, brush killing, etc.
• Genuine world's finest **Nypr.** 200 lb. pressure, 11 g.p.m. tractor drive pump, relief valve, gauge, hose (25 ft.), adjustable hand boom, etc. List $85.00.
Sale Ppd. **$69.50**

Row Crop and Above Spray Outfit
• Super-Special! — Above outfit with 5-row crop (17 ft.) boom and Boost nozzles, hose, etc. Complete. List $162.50. Sale **$124.60** Ppd.

SPECIALS FROM PREVIOUS ADS

• Surveyors Level and Tripod **$37.95**
• Navy Long Range Telescope (16-X) **$37.10**
• A-C, D-C Power Unit ($200 Cost) **$19.61**
• Brazing-Soldering Outfit, 6 Volt . **$ 2.99**
• Giant Flood Light (110-volt) **$49.50**
• Navy Bomb Hoist (1500 lb.) **$27.49**
• Gar Wood 12,000 lb. Winch **$169.50**
• Army Turbo Parts Cleaner **$29.95**

Build Your Own WINDOW or ATTIC FAN

• Build powerful 30 inch attic or window air conditioner single evening. Complete kit and plans. Use any old ¼ h.p. motor.
• Latest deep pitch balanced turbo fan. Very quiet. Moves to 7,000 cu. ft. cool air per minute. Frame easy to build.
• Kit has fan, bearings, shaft, belt, pulleys, cord, switch, hardware, plans. Equivalent to $50.00 Unit. . . . . **Sale $15.98 Ppd**

PUMPS AND VALVES

• Irrigation pump, septic tanks, water systems. Save 50%.
• Centrifugal pump . . **$19.95.** Navy Pump ($65.00) **$24.61.**
• Water System (110-volt) **$69.50**
Dozens tremendous bargains.

WE PAY all freight, express, parcel post—except where shown "F.O.B."
FREE CATALOG. 100's items in our surplus center warehouse.

BURDEN SALES COMPANY
826 "O" ST. LINCOLN, NEBRASKA

SAVE . . NEW-LOW PRICES!

COMPLETELY AUTOMATIC DIVING LUNGS
with exclusive SAFETY features
Complete . . Filled . . Ready to Use

FOR DEEP DIVING **99.50** Complete

SINGLE TANK Outfit Complete Approx. 1-Hour **$75**

APPROX. UNDERWATER TIME 2 HOURS

The SEA HORSE features
- **New Improved Demand Regulator**
- **Improved Non-Return Mouthpiece**
- **Emergency and Reserve Air Supply**

The 2-stage demand REGULATOR automatically releases air as needed; effortless breathing in any position, includes both emergency *and* warning device. New I.C.C. approved TANKS with current dating . . . 84 cu. ft. cap. at 2000 psi; standard fittings; can be refilled anywhere; check valves in MOUTHPIECE keep water out of hose. Complete comfort with full adjustable HARNESS. Rugged, rustproof construction throughout. Parts and service available. Weight 55 lbs.

Send Check or Money Order. If C.O.D., 25% with order. 10% deposit holds your purchase.

Write for Literature TODAY . . Club Inquiries Invited

DIVE-CRAFT INDUSTRIES DIVISION OF HONUS WAGNER CO.
813 Liberty Ave. Dept. PS-4 Pittsburgh 22, Pa.

Re-Breather Type-Mark 11 for Shallow Diving 69.50

Exclusive Features— Double Breathing Hose with Non-Return Mouthpiece

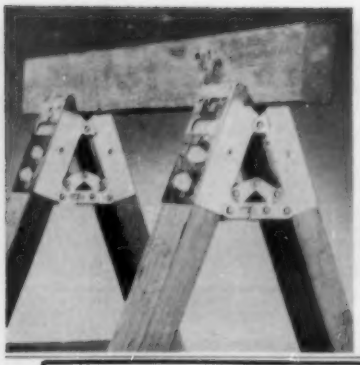
The finest Oxygen Re-Breathing Set ever offered for shallow water diving (to 35 feet). Completely rustproof. Brand new U.S. Navy Surplus. Complete with all accessories and instructions; 2500 lb. pressure gauge, wrench; nylon web adjustable harness; quick release buckle; new refillable brass tube canister. Baralyme Chemical type for extra economy; automatic demand mechanism. Two Hours Underwater Time. Weight 25 lbs.

Same Re-Breather Outfit with Single Hose . . $59.50

New "LITTLE WONDER" Non-Return Mouthpiece 8.45 PP

All-rubber. Built-in clapper valves keep water out of hose; prevent air mixing. A $19.95 value . . our price only $8.45.

SATISFACTION GUARANTEED or MONEY REFUNDED



Chesney

Latest Development

Model BC 100

SELF CONTAINED SAW HORSE BRACKET CLAMPS

Fully automatic. Fits any 2 x 4 common or finished lumber. Sets up or knocks down in seconds. No nails, bolts, screws or miters necessary. 12 permanent grippers actuated by one lever. Just insert wood and close clamp. Self locking. Holds sturdy with absolutely no wobble. No tools needed. Made from 16 gauge, zinc plated steel. Use Saw Horses for tables, benches, scaffolding, barricades, etc. See your Hardware, Lumber or Building Supply dealer—or send check or money order to

$3.95 Per Pair Delivered

Chesney INC.

720 TOWNE AVE., LOS ANGELES 21, CALIF.
Dealer and Jobber inquiries invited.

PLANNING TO BUY OR BUILD A BOAT?

LOOK FOR THIS WELDWOOD® TAG

IT'S YOUR GUARANTEE that the plywood used in the boat won't delaminate, is the best model

UNITED STATES PLYWOOD CORPORATION
World's Largest Plywood Organization
55 West 44th Street, New York 36, N. Y.

BARRON *Drill Press* TOOLS

ROTARY PLANER

Planes • Rabbets
Tenons • Panels
Routs • Bevels

Only $8.50 COMPLETE

FOR WORKSHOP AND INDUSTRIAL USES...

● Over 40 precision built woodworking tools and accessories . . . Hi-Speed Router Bits—Rotary Surface Sanders & Drum Sanders—Safety Shaper Cutters—Dovetail Cutters—Large Auxiliary Metal Tables—All Metal Shaper Fences — Spindle Adapters — Handy Bench Vises. Many other items indispensable for accurate, useful, versatile workshop use. Every tool sold on complete satisfaction or your money back. See your Barron Dealer. Ask for special folder — "24 Extra Uses for Your Drill Press."

FREE Workshop Guide & Catalog

BARRON TOOL CO. INC.
352 Architects Bldg., Detroit 1, Mich.

SUPERSHOP MAGIC POWER TOOLS

Only $16 each!

5 BIG POWER TOOLS IN ONE FACTORY TO YOU $79.95

Only SUPERSHOP can offer you a complete precision-built workshop for $16 per tool. 100% Ball Bearing. Lifetime accuracy. Rugged frame of heavy steel tubing. Handles big jobs. 8" saw. Sold direct from factory to save you $65.05. FREE trial. Easy pay plan. Free Catalog.

VERTICAL DRILL PRESS

Write for FREE Catalog

POWER TOOLS INC. 270 YATES AVE. BELOIT, WISCONSIN

NOW! put locking, folding legs on any table with BOSTROM

folding leg hinge

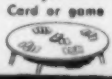
easy to install
holds up to 500 lbs.
fits any type leg

Model railroad

Ping Pong

Picnic table and bench

Card or game



Mount folding legs on any table. New one-piece Bostrom folding leg hinge holds up to 500 lbs. without swaying. Fits round, square or tapered legs. Folds and unfolds instantly. Locks leg securely in place. Instructions, plus materials for installation, included.

Available at Most Hardware Dealers
If your dealer has not received his Bostrom Folding Leg Hinges write

BOSTROM MANUFACTURING CO.
133 W. Oregon St., Milwaukee 4, Wisconsin

SAVE on PALLEY SPECIAL VALUES

CENTRIFUGAL PUMP AND MOTOR

9.95 — 20.00 VALUE

DELIVERS up to 700 G.P.H.

For draining cellars, fish ponds, sumps, water circulators, etc. Powered by the famous G.E. 110 volt, 60 cycle motor. Has 1" standard pipe inlet, 3/4 inch I.D. hose outlet. A Gov't Surplus Bargain. Completely Reconditioned. Motor is rewound and checked for serviceability. Ready to run. Your satisfaction fully guaranteed.

ARMY RIFLESCOPE AND SPECIAL MOUNT

A top quality Rifle Scope, built to rigid Gov't specifications – plus our own specially designed Mount. The Rifle Scope contains the finest, precision achromatic optics. Five double element lenses – fully corrected for spherical aberration and color. Has full 3power magnification. Dot reticle. The newly developed Pulley Scope Mount may be used with any type rifle. Has adjustments for windage and elevation. Will allow you to remove scope from mount for carrying or storage, and in addition you can remount the scope without disturbing your pre-set windage & elevation settings. Made of hardened alloy steel.

Price for Scope alone ONLY 9.95

MOUNT ALONE (without scope) 15.00

Scope and Mount, BOTH 24.50

HOIST 287.5

WITHOUT MOUNT

Ideal for Garages, Machine Shops, Trucks, Boats, etc. Has a 2500 lb. lift capacity through a 24 to 1 gear ratio. A bronze worm gear drive. 18 ft. of high tensile, steel cable – 3/16" diameter. NEW!

WINCH HOIST – Same as above with a free-spool, pull-out clutch. 29.75

HOIST MOUNTING FRAME

Specially designed for above winches. Allows easy universal mounting. Price of Frame Only 4.50

VICKERS HYD. TRANSMISSION

Self-contained, constant torque at all speeds with variable volume, reversible piston pump which supplies piston hydraulic motor. Has 2 H.P. Automatic pressure dash pot for smooth control. Power output RPM –0 to 1/3 input RPM in both directions. Input RPM 1800 continuous, 4000 intermittent. Ideal for Lathes, Duplicator setup on Mills, Conveyors, Small Cars, Drives, etc. 44.50

4" SPLINE SHAFTS for input and power take-off on above. Pair $2.50

INPUT & TAKE-OFF PLATE ASSEM. To adapt Trans. to pulley drive. Has 1/2" keyway shaft. Set $25.00

High speed bearings.

ARMY PORTABLE WINCH HOIST

NEW

LIFTS 1500 POUNDS

Made for U.S. Navy Bureau of Ordnance as a Bomb Hoist. Has a 21 to 1 gear ratio. 49" tubular arm extension with a 3" pulley on the end. Drum has 12 ft. of 3/16", high tensile strength steel cable. The operating handle has a ratchet brake. Ideal for 'swing about', truck or platform loading. A $125.00 Surplus Value. 22.50

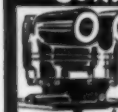
180° OFFSET DRIVE

NEW

For use where tremendous power at low take-off RPM is desired. 6 gears rotate on self-lubricating, hi-speed roller bearings. 85 to 1 gear ratio. Shafts are 1/4" & 3/8" dia. All NEW! 12.95 NEW

SURPLUS HI-PRESSURE PUMPS

PESCO HYDRAULIC PUMP



ONLY 14.95

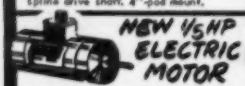
A gear type pump. Will deliver 2 gal. per min. at 1500 RPM with 1500 PSI. Delivers 6 gal. per min. at 4300 RPM with 1500 PSI. Has .375 cu. in. displacement per rev. 3/4" standard pipe ports. 5/8" male spline drive shaft. 4"-pad mount.

VICKERS HYDRAULIC ANGLE PUMP

A positive displacement, piston type. Displaces .507 cu. inches per rev. Has capacity of 6 gal. per min. at 3000 RPM with 1000 PSI or 3 gal. per min. at 1500 RPM. 22.50

Note: This is only a small sample of our tremendous stocks of Hydraulics which include Pumps, Motors, Valves, Tubing, Fittings, etc. Send for Catalog.

NEW 1/5 HP ELECTRIC MOTOR



A 1/5 HP, reversible series wound motor. Turns at 3800 RPM. Operates on 27 volts DC, 16 amps. Has a 12 spline, 9/32" diameter shaft. Size: 4-1/8" x 2-3/8". A NEW surplus bargain 3.95

DC GENERATORS

BENCH TESTED

Suitable for adaptation to home welding units, portable and rural lighting, power plants on boats, etc. Fully reconditioned and guaranteed serviceable.

TYPE	AMPS	VOLTS	PRICE
GI	140	30	17.95
PI	200	24	19.95
RI	300	24	27.95
310 NEW	50	15	14.95

MEA3 – 60 Amp DC – 28.5 Volts, or 10.4A, AC – 115V. . 27.50

V-BELT PULLEY KIT. To adapt V-belt pulley to above generators. $27.50

RHEOSTAT for control of above Generators. 150 Ohm, 100 Watt $7.50

AVIATORS (AN-6530) WINDPROOF & DUSTPROOF GOGGLES

Chamois lined, rubber covered frames. Has REPLACEABLE GROUND LENSES in either clear, amber or green. Frames have special non-fogging breather slits. Nose bar is adjustable. Specify lens color. 5.00 VALUE NEW 2.49

EXTRA LENSES—Choice of colors listed above. Price per pair 1.00

DO IT YOURSELF!

IT'S FUN! IT'S PROFITABLE

SAVE 50%

GENUINE SELECT PHILLIPINE MAHOGANY LUAN PLYWOOD

BUY DIRECT FROM IMPORTER

Ideal For Fine CABINET WORK, FURNITURE, Paneling DENS, OFFICES, HOTELS, etc.

Our prices are LESS THAN DOMESTIC PLYWOOD at WHOLESALE. This selected LUAN MAHOGANY meets the most rigid specifications. It is WEATHER and WATER RESISTANT. You'll be amazed at the beauty of this fine wood. Its rich golden elegance will thrill you. Rotary cut for beauty of grain. Both sides sanded and ready to use. Bonded with finest resin adhesive. Face side unjointed.

3 ft. x 6 ft. x approx. 1/8". 18 sq. ft. A 55.00 VALUE 1.79 PULL SHEET Min. order 2 sheets

See for YOURSELF FREE SAMPLE on request!

All orders shipped by special truck for LOWEST rates. No order accepted for less than 100 lbs. . . . (4) 1/4" sheets (8) 1/8" sheets

4 ft. x 8 ft. x 1/4" 32 sq. ft. A 89.00 VALUE 4.49 PULL SHEET Min. order 4 sheets

WORLD'S GREATEST DO-IT-YOURSELF TOOL BARGAIN!

3400 RPM 1/2 HP POWER SAW

NEW

compares to saws selling up to 49.50

Ideal for HOME SHOP

19.98 Complete with 5 1/2" Blade

RIPS — CROSSCUTS

A rugged, professional type, adjustable saw. Cut any angle. 0 to 45° Has adjustable (0 to 8") rip fence. Safety-trigger switch on handle. Full 1/2 HP Universal AC-DC, 110-120 Volt, 60 cycle motor. Weighs only 6 1/2 lbs. A sensational Value – We sold over 700 Saws in Los Angeles in one week.

EXTRA SAW BLADES – Available in Rip, Crosscut or Combination. Please specify . . . price each . . 2.95

SPORTSMAN'S 12 Pc. IMPORTED COMBINATION KNIFE

Complete with Genuine Leather Holster!

NEW

(A $12.95 VALUE) 4.95

COMPLETE CAMP KIT

Here is the Perfect, Combination Knife-Tool for every Outdoor Sportsman, Hunter, Camper, Fisherman, Boy Scout, Ranger, Rancher, etc. Think of it! 11, Fine quality Steel Tools, precision made to take easily care the heavy base covered body. In one neat, compact unit you have (1) a regular knife, (2) a fork, (3) a spoon, (4) a gravy-knife, (5) a bottle opener, (6) a can and bottle opener, (7) a corkscrew, (8) nail punch (9) screwdriver, (10) a metal file. All this PLUS a genuine leather, belt holster. (11) a can and bottle opener. ORDER NOW While We Can Guarantee Delivery at this Special Low Price

SIGNAL CORPS SURPLUS FIELD PHONES

U.S. ARMY

Can be used for a private phone or intercom system. Ideal for use on Farms, Mountains, Forests, Target Ranges or any place where portable two-way communication is desired. This is the famous EE8 type phone. Gives clear reception up to 15 miles. Uses two standard batteries. Set consists of a ringing generator, one phone, all contained in a genuine leather carrying case. Several of these phones may be hooked together on one line. Reconditioned & checked out.

Price per each phone & case 14.95

Price for a system of two phones 29.50

T-26 CHEST MICROPHONE & EAR PHONES – For use with above set. Plugs into Field Phone and leaves hands free. Has 3-way switch. NEW 7.50

AMAZING 320 PAGE CATALOG

FULLY ILLUSTRATED. Thousands of Bargains. Send 50¢ to cover the cost of Handling and Mailing. 50¢ credited to your first order. Send for yours TODAY!

ORDER FROM THIS AD – Pay by Money Order or Check. Purchase orders accepted from D&B firms. 50% deposit with C.O.D.s. Prices F.O.B. here.

PALLEY SUPPLY CO 3263 E. VERNON AVE. DEPT. PS-4 LOS ANGELES 58, CALIF.

[*Continued from page 125*]

up front and Ford truck drums in back. Flat, because he has an intricate underhung suspension on the vehicle that discourages diving or rolling. Each pair of wheels hangs from suspension points five inches below wheel centers.

Getting back up to speed, you notice that the Comet has a good ride, neither soft nor stiff, and that there's little noise and no vibration at fast highway speeds. This could be a good distance car. If you want entertainment there's a 24-volt radio with speakers tucked in both doors. If the shadows grow long, you've got your choice of three headlights. Two are aircraft landing lights for ordinary duty. The third, hinged behind that Cyclopean open port in the hood, is a ferocious searchlight that will burn your hand at a foot's distance. Flicking a toggle swings it down into position.

Power deck lid. Driving a roadster can be pretty chilly. You glance at the temperature gauges and note that the coolant, 90 percent ethylene glycol and 10 percent water, is running at its normal 220°. There's plenty of heat in the machinery, but no heater. So at Cramer's suggestion you touch a switch on the smaller switchboard. A Chrysler convertible-top mechanism boosts the rear deck lid a few inches and warm air floods into the cockpit from the cavernous trunk area.

There's a lot of machinery out back, enough to outweigh the 1,380-pound engine by a great deal. You stop by the roadside and Cramer takes you on a tour of the trunk. Besides the big transmission and power train underneath, there are two 30-gallon fuel tanks, a hefty fuel pump, a large coolant expansion tank, an oil filter the size of a small keg to cope with the engine's 32 gallons of oil, two 12-volt storage batteries, and a huge radiator from a diesel truck, mounted almost flat.

Cramer touches a button and the rear deck lowers and locks. It occurs to you that it would be interesting to see the Comet streaking off at a distance. Its builder climbs behind the wheel and his hands deftly fly about the switchboards preparing for another crank-up. As he booms away, you start wondering:

Will anyone seriously concerned with ground transport ever try to catch up with the Comet in power? Or is it simply a beautifully executed one-shot custom car?

Watching him light out for the horizon, it seems natural to think of Cramer's Comet as forever bounding across the Nebraska plain, its torpedo nose flashing in the sun, its high tail fins leaving vapor trails. Surely here's one car that isn't ready for taming on an assembly line. END

NEXT MONTH:

Installing an Air Conditioner

WHERE you should locate it, what type you should buy, what size will give the greatest efficiency, how to tell whether your wiring is adequate—you'll find answers to these and other questions in an informative article in the May issue of POPULAR SCIENCE MONTHLY about installing a room-size air conditioner.

PORTABLE LIGHT PLANTS

HI-LO Centrifugal PUMP

Completely self-priming! No foot valve required. Tremendous capacity—100 gal. per min. 1 . . . Special impeller enables pump to handle muddy or sandy water. Simple to operate—simply start engine and watch the water go. Powered by a rugged, easy-starting 2 HP Briggs engine. Prelubricated sealed bearings for years of heavy low-cost service. Big 1½" Model. Item 502. Wt. 70 lbs. Factory price..... **$134.50**

2" Model (150 gal. per min.) with 2½ HP engine. Item 502a. 90 lbs. Fact. Spec. **$154.50**

JET STEAM MASTER

Now, a super efficient portable steam generator that produces live steam at 100 lbs. pressure in 60 seconds from a cold start! Produces large volume of high pressure steam on 2 pints of fuel oil. Instantly cleans sticky grease, dirt, rust, old paint, etc. off implements and road machinery. Pays for itself in a few weeks. Sterilizes soil. Sterilizes as it cleans—milk equipment, etc. Fully automatic—oil fired with new, built-in lifetime bronze water circulating pump. Draws water from faucet or bucket. Simple and safe—anyone can use it; built-in safety valve. Complete with 12 ft. of hi-pressure steam hose and new triple efficiency steam gun that automatically mixes in soap solution if desired. Wt. 250 lbs. Item 463. Special factory price..... **$329.50**

HEAVY DUTY D-C ARC WELDER

with mounting flange (Item 38)

Use as portable or shop welder. Up to 300 amps. Senior model. Made for years of trouble-free, continuous service. Will handle light or heavy jobs. Easily welds up to ¾" plate using ¼" rods. Built-in air cooling system. Arc is easy to strike and hold, because of specially designed arc stabilizer. Hi-lo switch and dial control gives wide range of welding heats. Run welder at 2600 rpm. with tractor, jeep or 15 hp. gas engine, or 7 hp. elec. motor. Complete with instructions, guar. and triple V belt or flat pulley. You can pay more, but you can't buy a better welder. Wt. 110 lbs. #400 value **$119.50**

WELDING KIT Two 10 ft. leads, welding helmet, electrode holder, ground clamp. Sold only with welder at. **$10.50**

get **BEDROCK** factory prices

from **MASTER MECHANIC**

(Item 24)

600-700 WATTS PUSH BUTTON START

115 v. 60 cyc. AC Powered by a rugged 2 HP easy starting Briggs engine. No wiring necessary; just plug in and operate. Plenty of current for any oil burner, freezer, brooder, emergency lights, etc. which require up to 700 watts. Ideal for television and radios. Complete with Voltmeter and built-in winding to charge 6 v. auto batteries. (Item 24.) Wt. 75 lbs. Easily fits in car trunk. Be prepared if storm knocks out power lines. Reg. $275 value..... **$143.50**

1000-1200 Watt Plant (Item 45) same as Item 24 but larger generator and engine with 50% greater output..... **$199.50**

PORTO-POWER

1500-1750 Watt Plant 115/120 v. 60 cyc. AC. Push button start. Powered by a 4.5 HP Briggs engine. Combines compactness and easy portability with higher output for handling heavier starting loads. Ideal for operating oil burners, sump pumps, freezers, television, lights, communication systems, etc. Perfect for contractor's power tools. Wt. 146 lbs. (Item 20)..... **$279.50**

(Item 20)

MASTER-LITE 2500 Watt Plant 110/120 v. 60 cyc. AC. A powerful plant, ruggedly constructed and yet designed for easy portability. Can be started by rope or built-in 12 v. electric push button starter. Built-in winding to charge battery. Powered by a big 5.10 HP Briggs engine, complete with all accessories. Includes control box, voltmeter, and handy plug-in power receptacle. An ideal plant for permanent or stand-by service. Wt. 235 lb. Reg. price $645.00 (Item 21) Factory Price **$329.50**

(Item 21)

Dual Voltage 110/220 available for above plant for $30.00 additional.

3500 Watt Plant Push Button Start (Item 23) 115 v. 60 cyc. AC. Similar to above, but larger and 33⅓ more capacity. Wt. 270 lbs. Reg. $760. Factory Price..... **$379.50**

We make fully automatic controls to operate any of the above light plants. Write for details. **We make all sizes up to 25,000 watts.**

FROM FACTORY TO YOU

GIANT 2000-2500 WATT PLANT

110-120 v. 60 cyc. AC. absolutely the best made — exclusive dynamically balanced armature; heavy windings develop up to 5000 watt overload for motor starting. Skid mounted — portable. Powered by an easy starting Briggs or Wisconsin 6 HP engine—complete with all accessories; engine easily disconnected for other uses. Big outlet box, voltmeter, no wiring necessary. Ample current for all purposes. Factory warranty. (Item 31) Wt. 210 lb. Reg. price $585. Special at..... **$299.50**

Variable Speed Selector

(Item 68)

Heavy duty, made by **B. F. GOODRICH** for industrial use. Provides instant speed changes for any drive. For machine tools, dryers, printing, conveyors, production lines, hoists—any operation requiring variable speed. Employs reliable "trouble free" planetary system. No hydraulic power losses. Infinite range, smooth operation, easy installation. 3 sizes: 1½-1 hp. 36 lbs.; 1-2 hp. wt. 55 lbs.; 2-3 hp. wt. 105 lbs.; Reg. list $228, $252 and $352. Our prices ..... **$79.50, $89.50** and **$114.50**

52 pc. SOCKET SET

Highest quality, guaranteed non-breakable sockets made by Husky. Beautifully matched chrome thin wall alloy absolutely the best. Contains a complete set of 28 sockets in ¼" drive, ⅜" drive and ½" drive, plus all necessary extensions, handles, speeders, reversible ratchets, etc.; all uncond. guaranteed against breakage. A beautiful set of tools that will handle any job; in a big deluxe steel box. Wt. 17 lbs. (Item 205) List price $62.90. Factory special..**$27.95**

EXTENSION CORD

Heavy duty and very flexible. Neoprene 14-2 cable, 20 year quality. Wt. 12 lbs. (Item 185) 100 ft. Complete with rubber plug and outlet. A terrific buy at only **$8.95**

Send check or M.O. Prices f.o.b. Factory. 10 day Money back guarantee. SEND 10c for ... *BIG 1955 Catalog*

MASTER MECHANIC MFG. CO., DEPT. 34-K **Burlington, Wis.**

Attention "Do it Yourselfers"! Here is . . .

MODEL 700 $14.95 Ppd.

TERRIFIC POWER

- Guaranteed Power Sander
- 25 Sq. in. sanding area
- Positive—straight line action—no bucking

- 14,400 strokes per minute
- Performance equal to sanders costing up to $65.00

by

Weller!

INSTANT HEAT

- New compact design—Over 100 watts
- Trigger switch control—Dual spot lights
- Guaranteed for one year
- This soldering gun value unequalled on today's market

MODEL #100 $7.95 Ppd.

SEND CHECK OR MONEY ORDER

ACT NOW while these prices are still in effect!

Further information on request

LIFE LONG TOOL CO. Dept. 4A 1806 H Street—Sacramento, Calif.

NEW! DO - IT - YOURSELF *"Interlocking Connectors"* for All Furniture!

A. SAW HORSE—4 connectors needed.
B. TABLE—8 connectors needed.
C. CORNICE INSTALLATION—2 connectors needed.

PRICE 25c EA.

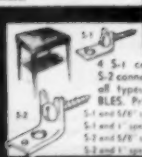
A. BED—4 connectors needed.
B. PICNIC TABLES & BENCHES—6 connectors for each
C. SHELVES—2 connectors needed per shelf.
D. DINING ROOM TABLE—2 connectors per leg.

PRICE 35c EA

INTERLOCKING CONNECTORS permit easy, instant assembly and dis-assembly of furniture. No special tools required. Results in rigid construction and greater strength.

8 connectors needed for all types of NOVELTY TABLES (2 connectors per leg).

PRICE 20c EA.



4 S-1 connectors and 4 S-2 connectors needed for all types of SHELF TABLES. Prices:

S-1 and 5/8" special screw	5c ea.
S-1 and 1" special screw	6c ea.
S-2 and 5/8" special screw	6c ea.
S-2 and 1" special screw	7c ea.

MAIL ORDER GRAM: Please send me the following INTERLOCKING CONNECTORS, postage prepaid, including detailed installation and assembly instructions for each connector ordered (Check which one you want and indicate quantity for each):

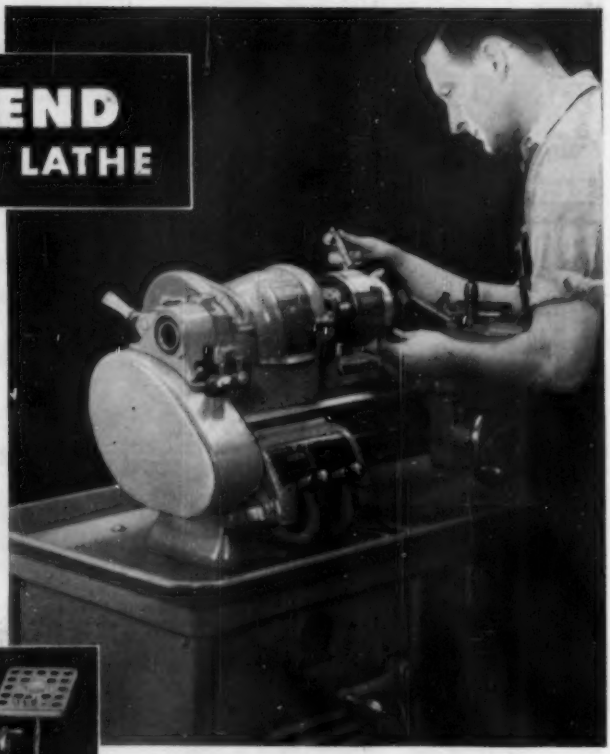
QUANTITY	CONNECTOR	QUANTITY	CONNECTOR
_____	S-1	_____	S-1 & ⅝" screw
_____	S-2	_____	S-1 & 1" screw
_____	S-4	_____	S-2 & ⅝" screw
		_____	S-2 & 1" screw

☐ Send 25c in coin today for complete catalog!

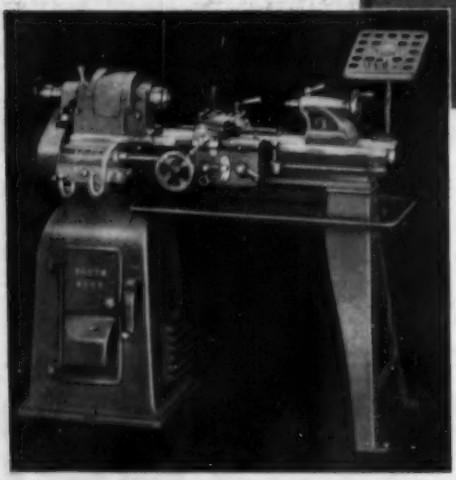
Send Cash, Check or money Order (or C.O.D.) to:

INTERLOCKING CONNECTORS,
4116 W. Belvedere
Baltimore 15, Md.

SOUTH BEND
10"-1" COLLET LATHE



Top Value
for those who want the best!

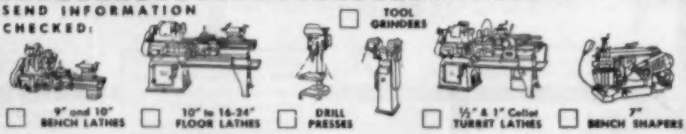


Built for exacting industrial work, the South Bend 10"-1" collet lathe satisfies the demands of any craftsman. Its accuracy simplifies precision jobs and permits work of the highest professional quality. This is the perfect tool for shop owners who want accuracy and versatility. Write for literature on the 10"-1" collet lathe and its many attachments. Time payment terms available. Only **3¼%** interest on original unpaid balance due.

Compared with our costs
OUR PRICES ARE LOWER
than they were back in 1941

Prices are closely tied to costs. Costs are still rising. Buy now before increased costs necessitate higher prices.

SEND INFORMATION CHECKED:



☐ 9" and 10" BENCH LATHES ☐ 10" to 16-24" FLOOR LATHES ☐ DRILL PRESSES ☐ TOOL GRINDERS ☐ ½" & 1" Collet TURRET LATHES ☐ 7" BENCH SHAPERS

Name_____ Street_____

City_____ State_____

Building Better Tools Since 1906 • **SOUTH BEND LATHE** • South Bend 22, Indiana

Look what FORMICA did for Mother's Old Chest and Daddy's Army Foot Locker

Formica Contact Bond Cement is available from your dealer where Formica sheets are sold. An ordinary rolling pin gives all the pressure you need. Toothed spreader free with cement.

This chest of drawers and toy box are typical of the beautiful practical children's furniture you can improvise with the help of Formica and simple tools.

You need not limit your Formica handicraft to any one room in the house. You can use one of Formica's authentic wood grains to resurface a living room table or use one of the new high style colors to replace your worn out sink top. The same Formica used by professional craftsmen is sold in sheets at lumber and linoleum dealers.

Send for a free copy of complete step-by-step picture instructions and actual samples of Formica.

DEMAND THIS CERTIFICATION

This mark certifies genuine

REMOVE WITH SOAP AND WATER

Beauty Bonded FORMICA Pays in Performance

Guaranteed by Good Housekeeping

Seeing is believing. If this wash-off identification is not on the sheet, it's not FORMICA.

THE FORMICA COMPANY

4595 Spring Grove Ave., Cincinnati 32, Ohio

MONTAMOWER'S NEW MOBILE BLITZ-BURNER

TRADE MARK

AND NOW THIS . . .

IS GOING THE WAY OF THIS . . .

OBSOLETES UNSIGHTLY OLD-FASHIONED TRASH BURNERS

Indestructible Armco Aluminized Steel . . . Attractive and Stays That Way . . . Can't Scorch Lawn or Driveway . . . Roll It Where You Want It . . . Light It and Leave It!

It's New! It's Revolutionary! It's the first outdoor home appliance scientifically designed for the efficient collection, storage and disposal of burnable household, lawn and garden waste!

It's built to last and stay good looking for many years. Entire electric-welded and reinforced body made of Special Armco Aluminized Steel which will not rust, corrode or distort. Combines the strength of steel with an inner and outer wall of aluminum.

Highly efficient, completely enclosed unit with adjustable draft and exclusive smoke-consuming combustion dome and mixing chamber. Quickly burns contents to a fine ash with no open flame and flying sparks . . . with a minimum of nuisance smoke! Ashes and partially burned debris cannot blow out to scatter around the yard and neighborhood. With a BLITZ-BURNER you don't have to "Stand Guard" till the flames die down . . . just light it and leave it! (No special starting fuel required.) Instantly removable handle serves both as dome lifter and poker.

It's mounted on steel disc, rubber tired wheels . . . rolls right up to kitchen door, leaf pile or garden . . . weighs only 32 lbs . . . saves the work of carrying trash to the burner! Can be fired safely anywhere . . . cannot scorch lawn or driveway.

It's a clean container for the accumulation of burnable waste . . . contents are protected from rain and snow . . . kept dry to burn readily! Compact design (20" x 36" overall); stores in minimum space.

It's the kind of burner you've always wanted! Now being introduced to the public direct from the factory . . . write today for full details on our Special Introductory Offer.

Park it anywhere for handy accumulation of contents . . . holds 3¼ bushels.

Patent Applied For

Wheel it to the leaf pile — burn them on the spot — can't scorch lawn or driveway.

Barbecues steaks and hamburgers to perfection.

WONDERFUL BAR-B-Q WITH LOW COST ACCESSORY

Just invert combustion dome which seals off inside of burner and insert charcoal grill.

BUILT TO LAST FOR YEARS—PRICED WITHIN THE REACH OF ALL!

Special "DIRECT-TO-CONSUMER" INTRODUCTORY OFFER • MAIL COUPON TODAY!

MONTAMOWER DISTRIBUTING CO., Sales & General Offices
337 KEELER BUILDING, GRAND RAPIDS 2, MICHIGAN

Please send details on your "Direct-to-Consumer" Special Introductory Offer.

NAME _____

ADDRESS _____

CITY _____ ZONE ____ STATE _____